Version 4 Release 4

IBM IMS Performance Analyzer for z/OS User's Guide

SC19-4365-01

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Note:
Before using this information and the product it supports, read the "Notices" topic at the end of this information.

Second Edition (December 2018)

This edition applies to Version 4 Release 4 of IBM IMS Performance Analyzer for z/OS (product number 5655-R03) and to all subsequent releases and modifications until otherwise indicated in new editions.

This edition replaces SC19-4365-00.

Contents

About this information

IBM® IMS Performance Analyzer for z/OS® (also referred to as IMS Performance Analyzer) is a performance analysis and tuning aid for Information Management System Database (IMS DB) and Transaction Manager (IMS TM) systems.

IBM IMS Performance Analyzer for z/OS (also referred to as IMS Performance Analyzer, or by the abbreviation IMS PA) is a performance analysis and tuning aid for Information Management System Database (IMS DB) and Transaction Manager (IMS TM) systems.

These topics describe how to use the IMS Performance Analyzer dialog and batch commands to generate reports and extracts from IMS Log, Monitor, IMS Connect, and OMEGAMON® Transaction Reporting Facility (TRF) and Application Trace Facility (ATF) data. The report options are also described.

Related reading: For a detailed description of the report and extract output, see the *IBM IMS Performance Analyzer for z/OS Report Reference, SC19-4366*.

These topics are designed for managers, database administrators, system programmers, application programmers, and system operators responsible for monitoring and improving the performance of IMS systems.

To use these topics, you should have an understanding of basic IMS concepts and your installation's IMS systems, and a working knowledge of:

- The z/OS operating system
- ISPF
- IMS Database and Transaction Monitor systems
- IMS Connect and IMS Connect Extensions, if applicable

IMS Performance Analyzer is designed to support IMS Versions 12, 13, 14, and 15. Where IMS Performance Analyzer functionality is IMS release-dependent, the following abbreviations may be used:

IMS V12
(IMS Version 12)

IMS V13
(IMS Version 13)

IMS V14
(IMS Version 14)

IMS V15
(IMS Version 15)

Always check the IMS Tools Product Documentation page for the most current version of this information:

http://www.ibm.com/software/data/db2imstools/imstools-library.html

Part 1. Introduction and product setup

This part provides you with an overview of the IMS Performance Analyzer product, its main concepts and components, and how to get started.

IBM IMS Performance Analyzer for z/OS (also referred to as IMS Performance Analyzer, or by the abbreviation IMS PA) is a performance analysis tool to help you monitor, maintain and tune your Information Management System Database (IMS DB) and Transaction Manager (IMS TM) systems.

Chapter 1. IMS Performance Analyzer overview

IBM IBM IMS Performance Analyzer for z/OS (also referred to as IMS Performance Analyzer, or by the abbreviation IMS PA) is a performance analysis and tuning aid for DB and TM systems for IMS versions 12, 13, 14, and 15.

Related reading: There are several IMS Redbooks® that provide additional performance and tuning information for your IMS systems. The *IBM IMS Version 7 Performance Monitoring and Tuning Update* (SG24-6404) is recommended because it contains additional information on how to interpret many of the IMS Performance Analyzer reports to help you make tuning decisions. This information, although not exhaustive, is generally applicable to later releases of IMS. Supplementary information is provided in *IBM IMS Performance and Tuning Guide* (SG24-7324).

What's new in IMS Performance Analyzer

This topic summarizes the technical changes in this edition.

New and changed information is indicated by a vertical bar (|) to the left of a change. Editorial changes that have no technical significance are not noted.

IBM IMS Performance Analyzer for z/OS Version 4 Release 4, Second edition

This edition SC19-4365-01 includes the following new and changed features:

IMS Version 15 support
Support for IMS Versions 12, 13, 14, and 15.

Additional Internal Resource Usage reports
The Internal Resource Usage reports now include information about Individual TCB Statistics and 64-bit Storage Statistics.

ATF Enhanced Summary reports
In a Log report set, you can now define and run reports on the OMEGAMON ATF Summary record, including analysis of transactions, DLI calls, DB2® calls, MQ calls, and you can also create an extract.

New sample forms
The following sample forms have been added: SWITLIST, SWITSUMM, TRANRES1, TRANRESD, OLRLIST and OLRSUMM.

Resume tpipe extended report
You can now produce the resume tpipe report in extended format, which supports all of the different resume tpipe types and options, and the IMS V14 parallel resume tpipe option.

OTMA NAK sense codes
Some new OTMA NAK sense codes are now supported.

Logger Statistics new fields
In the Report Reference, more documentation has been added for the Logger Statistics report so that its fields are now documented more completely.

IBM IMS Performance Analyzer for z/OS Version 4 Release 4

This edition SC19-4365-00 includes the following new and changed features:

IMS Version 12, 13, and 14 support
Support for IMS Versions 12, 13, and 14.

Inflight transaction support for IMS Log reports
When the inflight option is used, IMS Performance Analyzer does not report incomplete transactions in the IMS log. Instead it writes their details to a holding data set called an outflight data set. This data set is then input into the next IMS Performance Analyzer job as the list of transactions pending completion. Transaction information that was previously incomplete due to a log switch is now complete.

The following reports are affected by this change:

- "Transaction Transit reports" on page 300
- "Transaction Transit reports (Form-based)" on page 318
- Chapter 19, "IMS Transaction Index," on page 271
- "Internal Resource Usage reports" on page 340

Refer to "Log Global Options" on page 294 for further detail.

Region PST increased from 3 to 4 bytes
The Region PST field size has increased from 3 to 4 bytes due to an increase in the maximum partition specification table (MAXPST) limit to 4095. This change increases the LRECL by 1 byte on multiple reports:

- Log reports
  - LIST: Form-based Transaction Transit List report and extract using PSTID
  - SUMMARY: Form-based Transaction Transit Summary report and extract using PSTID
  - FPLOG: Fast Path (EMH) Transaction Transit Log report
  - FPTRNEX: Fast Path Transaction Exception extracts
  - DCTRACE: DC Queue Manager Trace report
  - TRANEXC: Transaction Exception extracts
  - FPDBTRC: DEDB Update Trace report.
- Monitor reports
  - ESAF: External Subsystem report
- Connect reports
  - LIST: Form-based Transaction Transit List report and extract using PSTID
  - SUMMARY: Form-based Transaction Transit Summary report and extract using PSTID

For other reports that include Region PST, the value has been accommodated within the existing column and there is no change to the LRECL of the report.

IMS Performance Analyzer automatically allocates new extract data sets with the correct record length. If appending to an existing data set, a CSV or for DB2, you will first need to redefine the DCB attributes to increase the LRECL by 1 byte and reload the data set.

For Log and IMS Connect form-based log reports when loading the extract data into an existing DB2 table with PSTID column of CHAR(3), the table

definition must first be modified to support a PSTID of CHAR(4) and the field POSITION statements adjusted before reloading the table. For an example, see the "COMBLIST: Combined IMS and Connect List report" on page 238 sample form. For additional help contact your DB2 Administrator.

Form-based reporting enhancements

BMP treatment option
New option to report each BMP syncpoint interval as a single transaction, allowing you to analyze BMP activity in greater detail.

Refer to the following topics for further detail:

- ISPF: "Transaction Transit (Form-based) Options" on page 318
- Batch: "Transaction Transit (Form-based) Options" on page 437

Shared queues option
New option to only report transactions that were processed on subsystems who logs were input.

Refer to the following topics for further detail:

- ISPF: "Transaction Transit (Form-based) Options" on page 318
- Batch: "Transaction Transit (Form-based) Options" on page 437

Program switches option
New option to either report all transactions independently, or to group transactions associated with a program switch sequence.

Refer to the following topics for further detail:

- ISPF: "Transaction Transit (Form-based) Options" on page 318
- Batch: "Transaction Transit (Form-based) Options" on page 437

Additional reporting of CPU time as service units
The service unit normalizes the reporting of CPU time to allow for performance comparisons between, for example, an older processor and a newer processor in terms of CPU effort. Refer to "CPUSU" on page 782 for further detail.

New value in QTYPE form field
The form-field "QTYPE" on page 809 has a new value, LOCALF, to indicate that the shared queue transaction was processed 'local-first'.

New region occupancy form field
The new region occupancy form field "REGOCCUP" on page 810 reports the elapsed time that the transaction occupies in a message region, which can sometimes be longer than the usual application processing time due to an external system problem.

Log report enhancements

`FORMAT2` option for Database Update Activity reports
Database Update Activity (DBUA) reports can be generated with the more concise `FORMAT2` option.

Refer to the following topics for further detail:

- ISPF: "Database Update Activity report and extract" on page 346
- Batch: "DBUPDATE: Database Update Activity report and extract" on page 456

LOGINFO operand for IMSPALOG **command**
Log Information reports can now be generated using the IMSPALOG LOGINFO batch command without running a report set.

Refer to the following topics for further detail:

- Report content: "Log Information report" on page 407
- Batch: "LOGINFO: Log Information report" on page 487

IMS Processing ID option
New option to use the input log files to source the **IMS Processing ID**.

Refer to the following topics for further detail:

- ISPF: "Log Global Options" on page 294
- Batch: "Log Global Options" on page 425

Ignore x'6D' surveillance records option in Log Gap Analysis report
The Log Gap Analysis report has a new option to ignore type x'6D' surveillance records that can mask periods of system inactivity.

Refer to the following topics for further detail:

- ISPF: "Gap Analysis report" on page 354
- Batch: "GAP: Gap Analysis report" on page 462

Fast Path (IFP) Region Occupancy report enhancement
The "IFP Region Occupancy report" on page 369 exploits the new type x'5904' record to provide a clearer breakdown of occupied versus idle time.

Internal Resource Usage report (IRUR) enhancements
The Internal Resource Usage report (IRUR) is enhanced to support the new statistics provided by IMS versions 12, 13 and 14:

- x'4502' Queue Pool statistics provides high water marks for buffer usage.
- x'4507' Logger statistics provides WADS and OLDS I/O time.

Message Queue Utilization report enhancements
New option to report on record lengths instead of message lengths.

Refer to the following topics for further detail:

- ISPF: "Message Queue Utilization report" on page 345
- Batch: "MSGQ: Message Queue Utilization report" on page 455

Monitor report enhancement
The Monitor report ALTSCHED global option is improved to count actual schedules only, disregarding wait-for-input events. This provides a more accurate picture of the transactions per schedule ratio in pseudo-WFI environments.

IMS Connect Gap Analysis report
The Gap Analysis report contains information on periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS Connect to slow down.

Refer to the following topics for further detail:

- ISPF: "Connect Gap Analysis report" on page 598
- Batch: "GAP: IMS Connect Gap Analysis report" on page 621

MONITOR report option enhancements for OMEGAMON ATF Trace reports
OMEGAMON ATF Trace reports using the MONITOR option report additional transaction identification and performance characteristics, columns, and reporting detail for DB2 SQL and IBM MQ events. Refer to "ATF Trace reports" on page 667 for further detail.

IMS Performance Analyzer Version 4 Release 3

The previous edition included the following changes. They are not marked in the body of the book.

IMS Version 10, 11 and 12 support
Exploits all the new features and instrumentation in the IMS log and monitor:

- IMS Version 10: Type 56FA transaction accounting record provides accurate transaction CPU time, DLI call, database I/O, and ESAF usage
- IMS Version 11: Synchronous call-out (ICAL) and Open Database
- IMS Version 12: Improved MSC statistics

In addition:

- Sysplex reporting supports changes in IMS version across log files, allowing you to seamlessly continue IMS PA reporting when migrating to a new version of IMS.
- The impact of synchronous call-out (ICAL) requests on overall transaction performance can be measured.

OMEGAMON for IMS Application Trace Facility (ATF)
Collects detailed information about every application call made by IMS and DBCTL transactions. DLI and DB2 call results are recorded in the ATF journal, including function code, SSA, KFBA and IO area. This provides the most in-depth analysis of transaction behavior available.

IMS Performance Analyzer provides management and reporting of ATF, including:

- Archival of the online ATF journals to offline data sets for post-analysis. Filtering criteria allows you to archive problem transactions only, significantly reducing the volume of data kept and time to resolution.
- Three levels of reporting: from summarization of transaction activity and high level transaction detail, to in-depth traces that report every detail about each application DLI call.
- Statistics collection enhancements provided by APAR OA36278: Interim Feature 3 (IF3).

Improved CICS®-DBCTL reporting
The CICS transaction id and task number are now reported in DBCTL form-based reports. This allows you to match the CICS transaction as reported by CICS Performance Analyzer with the IMS thread reported by IMS Performance Analyzer to better understand the impact of IMS on CICS transaction performance.

In addition, form-based reporting provides a more granular breakdown of syncpoint processing including phase 1, phase 2 and OTHREAD elapsed times.

New specialized reporting: LOGINFO
The Log Information report provides a synopsis of the log record types in the IMS log, including record count, lengths, rate per second, and volume.

Selected record types are broken down further to provide additional information about transaction arrival and processing rates.

Transaction Index

The index is improved to append diagnostic information from the IMS log when available, for example the deadlock diagnostic record. In addition, you can specify exception criteria to record problem transactions only.

Form-based reporting

Form-based reporting provides flexible user-customizable transaction performance analysis. Further enhancements provide improved specialized analysis:

- CICS-DBCTL, including scheduling delays
- Syncpoint time breakdown, including phases 1 and 2
- OTHREAD – how long did the (asynchronous) OTHREAD process take to update the Fast Path areas?
- Program switch sequences can be better tracked and summarized
- BMP syncpoint/checkpoint activity
- Individual database update activity: Which transactions update which databases?
- External subsystem activity: Which transactions use DB2, and for update or read-only?
- Column headings changed for the following fields:
  - ESAFCCON: Cmt Cont Complete is now ESAF CC End
  - ESAFCOMT: Commit Time is now ESAF SP Time
  - ESAFNAME: External Sub-Sys is now ESAF Name
  - ESAFPRE: Cmt Prep Start is now ESAF CP Start
  - EXITNAME: Readexit Name is now Connect Exit

IMS Connect Transaction Index

Contains a record for each IMS Connect transaction recorded in the IBM IMS Connect Extensions for z/OS journal, and includes all the cumulative information from the journal about that transaction.

IBM IMS Problem Investigator for z/OS uses the IMS Connect Transaction Index, either on its own or merged with the associated IMS Connect Extensions journals and IMS log files, to provide improved levels of problem detection. By tracking against the index record for a transaction, you can see all the associated Connect events.

Application Groups

Allow you to group transactions that belong to the same business or application unit for reporting purposes, allowing you to analyze performance based on business unit rather than individual transaction code.

Internal resource usage enhancements

The Internal Resource Usage report (IRUR) is enhanced to support the new statistics provided by IMS Version 12:

- Logical Logger
- 4517 User Exit Statistics

IMS Tools Knowledge Base

IMS log reporting can now write reports directly to the IMS Tools Knowledge Base repository for historical collection and viewing from the IMS Tools KB dialog. IMS Tools Knowledge Base is a component of IBM Tools Base for z/OS, V1.5 (5655-V93).

Non-message driven BMP changes

A non-message driven BMP is now reported as a single transaction, and statistics for each syncpoint are accumulated and reported at BMP end, or end of IMS log. Prior to IMS Performance Analyzer V4.3, every BMP syncpoint was treated as a single transaction. As a result of this change, transaction counts contained within "Transaction Transit reports (Form-based)" on page 318 may increase, and other values are recalculated accordingly. Select a Transaction Mix of `5` (batch: `TRANMIX(5)`) to exclude BMPs (including JBPs) from reporting if you do not want batch jobs to distort performance-related statistical analysis of online transactions.

See also "Log Information report" on page 407.

What does IMS Performance Analyzer do?

IMS Performance Analyzer provides a comprehensive suite of reports to help you manage the performance and resource utilization of your IMS systems.

IMS Performance Analyzer processes IMS Log, Monitor, IMS Connect event data, and OMEGAMON TRF and ATF data to provide comprehensive reports for use by IMS specialists to tune their IMS systems, and managers to verify service levels and predict trends.

IMS Performance Analyzer provides an ISPF-based dialog for you to use to create and maintain your report and extract requests, and generate the JCL to run them using your specified systems and data files. The IMS PA Control Data Sets are used to store your report and extract requests.

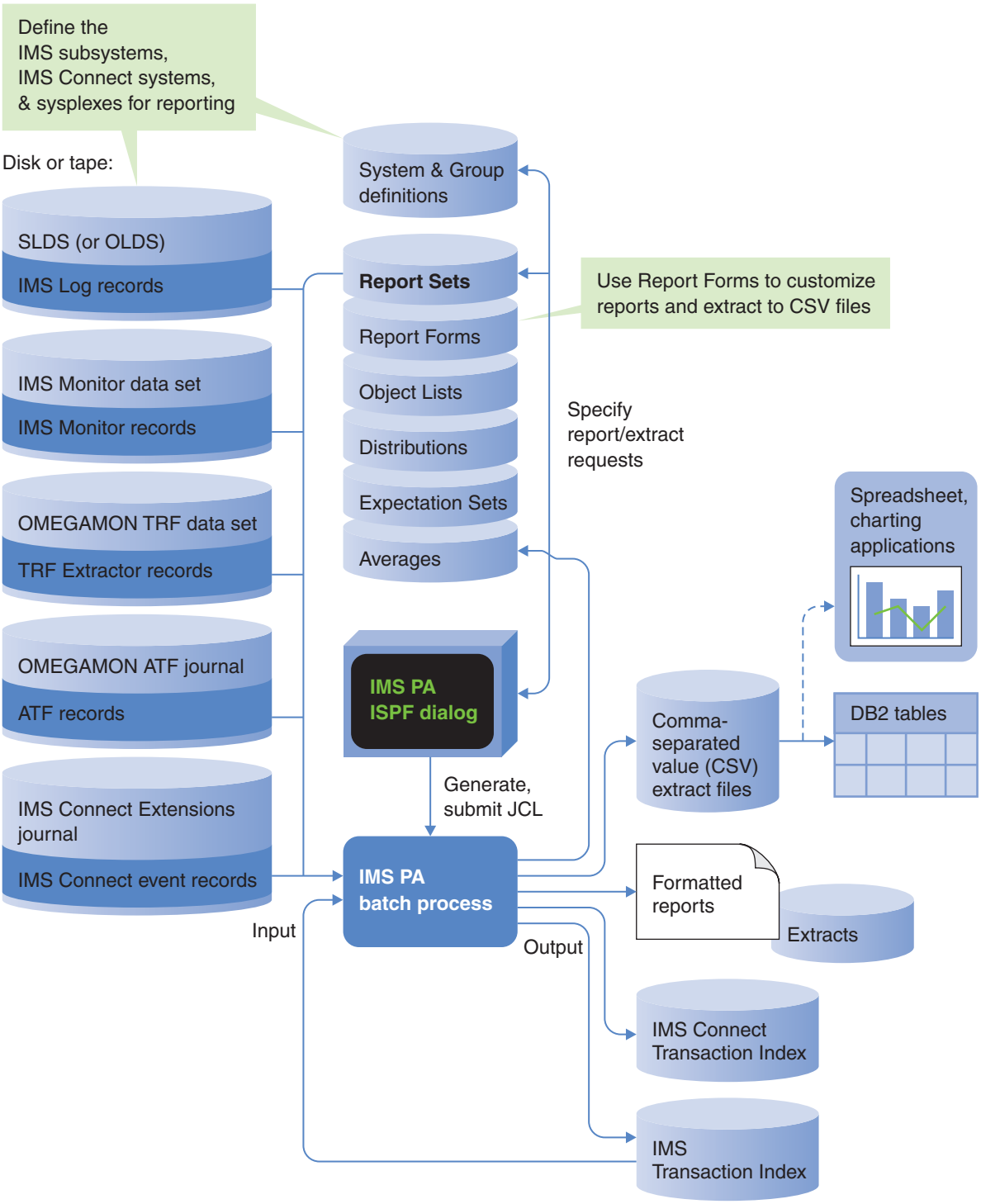

Figure 1. Overview of IMS PA operation

From IMS Log data, IMS PA provides comprehensive information about transit times (actual system performance time), and IMS resource usage and availability. IMS PA can process logs from a single IMS system, or from multiple IMS subsystems running in a sysplex and using shared queues. You can specify log files explicitly or let IMS PA use DBRC Log Selection and the IMS RECONs data sets to automatically locate the files for your required reporting interval. User-defined

performance thresholds allow you to set goals and report exceptions. A history of transaction performance can be maintained in Transaction History Files.

Extracts of transit time by time interval data can be created from log files then graphed or exported (with transfer to PC) using IMS PA facilities. Extracts of total transaction traffic or exception transactions (MSGQ or Fast Path), CPU usage and database update activity can also be created for direct import by external programs such as DB2 or PC-based reporting tools.

Report Forms can be used to tailor transit summary and list reports to include only the data fields of interest. Form-based extracts can be created then directly loaded into DB2 tables.

From Monitor[1] data, IMS PA creates summary and analysis reports for regions, resources, programs, transactions, databases, and the total system, to analyze your IMS system environment. IMS PA provides comprehensive reporting for the IMS Fast Path Monitor, including DEDB, BALG/EMH, FP Buffer, OTHREAD and VSO. External Subsystem call activity can be incorporated in applicable reports. Alternative sequencing of reports by Occupancy, Calls or Delay can be requested to highlight bad performance.

IMS PA provides comprehensive reporting from the IMS Connect performance and accounting data collected by IBM IMS Connect Extensions for z/OS (5655-S56). You can specify Connect data sets explicitly or let IMS PA use Connect Journal File Selection and the IMS Connect Extensions Definitions Data Set to locate the Journal data sets for your required reporting interval. Summary and detailed reports analyze IMS Connect transaction internal and external transit times and latencies, highlighting critical events for message processing. They also provide information about significant processing events with the potential to impact performance, including resource availability and session errors.

You can obtain a complete end-to-end picture of transaction transit performance by using Form-based reporting and combined IMS and Connect data.

IMS PA provides comprehensive reporting of IMS transaction performance and resource utilization statistics collected by the Transaction Reporting Facility (TRF) for OMEGAMON XE for IMS (5698-A34). The TRF data includes transaction response time breakdown, CPU time, and other resource usage statistics, Full Function and Fast Path database DL/I call count and elapsed time, and DB2 database call count and elapsed time.

OMEGAMON XE for IMS Application Trace Facility (ATF) complements TRF reporting.

IMS Performance Analyzer features and benefits

IMS PA helps you to analyze many different types of performance issues.

Highlights of IMS PA reporting from log data include the following:

1. In this book, the term *monitor* applies to both the IMS Monitor used in the IMS TM (formerly DC) environment and the IMS DB Monitor used in the IMS DB environment. In cases where information applies to only one of the monitors, the term *IMS Monitor* or *DB Monitor* is used.

- IMS PA produces a comprehensive set of reports, organized by IMS resource type, to give multiple views of transit time, resource usage, and resource availability.
- The following reporting is supported:
  - Message Queue Transaction and Full Function Database
  - Fast Path EMH Transaction and DEDB/MSDB Database
- IMS PA supports shared queues in an IMS sysplex; multi-subsystem log input is merged by time stamp sequence to produce either composite reports or reports by subsystem.
- System balance is determined in management exception reports, one for message queue transactions, and another for Fast Path EMH transactions.
- Each transaction is dissected into parts (local or shared input queue, program execution, output queue, output shared queue, output local queue, and program switch time) for analysis of these times to pinpoint response bottlenecks.
- Extract files of transit times by time period can be produced for comparative analysis using IMS PA graphing facilities, exporting for manipulation by external programs, or downloading to a PC.
- Reports on transit time can be ordered by any or several of the following to create multiple views of system response:
  - Logical terminal or User ID
  - Transaction code
  - Transaction code within logical terminal or User ID
  - Line or VTAM® node
  - Message class
  - Time of day
- Reports can illustrate:
  - Region use and scheduling efficiency
  - Database update activity
  - Message queue utilization efficiency
  - Buffer pool statistics
  - Availability of resources (regions, transactions, programs, lines, VTAM nodes, databases)
- Trace reports can help with detailed analysis of the log data.
- Multiple reports (all activated reports in a Report Set) are produced from a single pass of the IMS log without requiring sorting of the log data.
- User-written programs that process IMS log records can be included under IMS PA.
- List and summary reports and extracts can be constructed using Report Forms, ensuring they are specific and tailored to suit your varied reporting requirements.

Report Forms provide the following advantages:

- Customizable reporting or extract to data set. Field selection allows you to request only the information you need to see.
- Both IMS log and IMS Connect Extensions transit reporting is supported.
- Comprehensive OMEGAMON TRF reporting is supported.
- IMS log and IMS Connect Extensions event data can be merged into a single report, providing end-to-end reporting for IMS Connect transactions.
- More than 160 IMS and 40 IMS Connect transaction information fields are available for selection in reports, providing an improved level of detail for

measuring transaction processing and resource usage. For a comprehensive list of these fields, refer to Chapter 41, "Glossary of Report Form field names," on page 777.

- IMS log reporting provides improved accuracy, additional log record types are used to provide a clearer picture of transaction transit activity.
- Wide reports ease the restriction of the 132 column page width. Additional fields can be requested in the report and IMS PA will automatically adjust the page width.
- Extract data sets can be used as an alternative to reporting, where report data is written to CSV files for importing into DB2 or a PC spreadsheet. For more information, refer to "Exporting form-based CSV extracts to DB2" on page 260.
- Precision of elapsed and CPU times is customizable, from millisecond (0.001) to microsecond (0.000001). For example use Forms to report input queue, processing elapsed and CPU times with microsecond precision.
- Summary reporting allows up to 8 grouping or key fields.
- Statistical functions (average, minimum, maximum, standard deviation, peak percentile, total, count, range) can be requested at the field level.

Examples of ways in which IMS PA log reports can be used:

- Identify transactions involved in slow responses and identify the cause of the slow response.
- Trace certain problems back to their source. For example, an IMS 0801 abend code indicates a database problem. The SMU (Space Management Utilities) feature of DB Tools can be run to find the type of problem (a bad pointer, for example). IMS PA can then analyze the log to determine who caused the problem, and when.
- Detect poor choices in pool sizes and other specifications using the formatted information on pool use in log record 45*xx*, 02=Queue Pool, 03=Format buffer pool, 04, 05, 08, and 0E. The transactions affected by these choices can also be identified. Statistics can be reported on a per transaction basis.
- Present statistics on region occupancy to reveal inefficient region scheduling and availability.
- Produce graphic summaries of region use using a histogram.
- Compare performance of different IMS subsystems.

Highlights of IMS PA reporting from monitor data include the following:

- IMS PA produces a comprehensive set of reports (from management summaries to detailed program traces), organized by level of detail and area of analysis, to meet a broad range of IMS system analysis objectives, such as the following:
  - System performance evaluation. IMS PA features help you monitor and evaluate IMS system performance on a daily basis. Management level summary reports express key values in terms of rates, ratios, and percentages. These reports help you use IMS PA for trend analysis and comparative analysis of systems, and for evaluation of a system against installation standards.
  - System tuning. Reports that help you enhance IMS system performance through system tuning are a key feature of IMS PA. Monitor output is summarized and categorized to help you rapidly identify problem areas. Detail analysis reports help you investigate and evaluate these problem areas and also the effect of changes to the system.
  - Application and program evaluation. IMS PA reports program activity in message processing or batch regions. IMS PA can be a valuable tool for

evaluating existing applications and programs, and for validating whether new applications and programs conform to installation standards. Program activity reports and program traces add greatly to system documentation.

- IMS PA produces alphanumerically collated report items in terms of ratios, rates, and percentages to facilitate comparison of results without additional computations.
- External subsystem statistics can be incorporated into Region and Program reports.
- IMS PA provides alternative sequencing of reports by Occupancy, Calls or Delay with the option to limit reporting to the worst performers.
- Schedules in progress, including wait-for-input (WFI), IMS Fast Path (IFP), and BMPs, are reported.
- Reports on IMS batch programs are provided.

IMS PA provides a comprehensive set of reports from the IMS Connect event data collected by IMS Connect Extensions for z/OS. With the combined Connect and IMS log reports, you can trace the entire life of an IMS Connect transaction.

IMS PA is a tool for management as well as for system programmers and technical support personnel. It produces management-oriented reports, and it produces summary and detailed information for those directly involved in improving system performance. When used on a regular basis, IMS PA can help you:

- Improve system performance
- Improve transaction transit time
- Manage your IMS Connect Internet communications more efficiently
- Use IMS regions and message queues more efficiently
- Reduce virtual and real storage requirements in buffer pools
- Increase the availability of IMS resources
- Evaluate applications and programs against system standards before installation
- Do ongoing system measurement and management reporting
- Debug IMS applications
- Increase the productivity of analysts and programmers
- Determine future system requirements
- Enhance system and program documentation
- Reduce the need to run IMS utilities
- Reduce the requirement to run the monitor reports supplied with IMS
- Provide auditors with valuable data for a number of potential audit tasks

Performance management solutions

IBM solutions help IT organizations maximize their investment in DB2 and IMS databases while staying on top of some of today's toughest IT challenges. Performance Management solutions can help maximize the productivity and profitability of your DB2 and IMS databases.

IMS Performance Analyzer is one of several IMS Tools products that help maximize database performance to support service level agreements (SLA), drive higher transaction rates, and ultimately increase profitability.

The following additional IMS Tools products also provide Performance Management solutions:

- IBM IMS Problem Investigator for z/OS
- IMS Buffer Pool Analyzer for z/OS
- IMS Network Compression Facility

- Tivoli® OMEGAMON XE for IMS on z/OS

IMS Performance Analyzer provides an enhanced level of problem determination services for IMS Transaction Manager (IMS TM) and IMS Database Manager (IMS DB) systems.

IMS Performance Analyzer complements IBM IMS Problem Investigator for z/OS and IBM IMS Connect Extensions for z/OS making the end-to-end analysis of IMS related performance and resource utilization quicker and easier than ever before. The result is improved productivity for problem analysts, more efficient IMS application performance, improved IMS resource utilization, and higher system availability.

Hardware, software, and storage prerequisites

IMS Performance Analyzer is installed by using SMP/E and standard RECEIVE, APPLY, and ACCEPT processing.

Complete information about installation requirements, prerequisites, and procedures for IMS Performance Analyzer is located in the *Program Directory for IMS Performance Analyzer*.

Hardware

IBM IMS Performance Analyzer for z/OS, V4.4 operates on any IBM eServer™ zSeries machine on which a required operating system and other required software are installed and running. If your z/OS operating system, IMS, and IBM IMS Connect Extensions for z/OS were installed in compliance with their documented minimum hardware requirements, you have only the following additional requirements to consider in installing IMS PA:

- DASD storage required for the IMS PA product. For information on DASD requirements, refer to the Program Directory that is shipped with IMS PA.
- DASD storage for extracts, Transaction History files, and the Transaction Index.
- Optionally:
  - Printer for printing reports and graphs
  - Display device that supports GDDM graphs
  - PC for downloading export data

Software

Before installing and configuring IMS PA, ensure that the following software requirements are fulfilled:

Installation requirements and operating system

- z/OS, V1.11 (5694-A01) or later

Mandatory operational requirements

IMS PA V4.4 is designed to operate with any of the following IMS versions:

- IMS V12.1 (5635-A03)
- IMS V13.1 (5635-A04)
- IMS V14.1 (5635-A05)
- IMS V15.1 (5635-A06)

Conditional operational requirements

To analyze IMS Connect event data, IMS PA requires event information collected by:

- IBM IMS Connect Extensions for z/OS, V2.3 (5655-S56) or later

To analyze OMEGAMON TRF data, IMS PA requires statistics collected by:

- IBM Tivoli OMEGAMON XE for IMS on z/OS, V4.2 (5698-A34) or later, Transaction Reporting Facility

To analyze OMEGAMON ATF data, IMS PA requires statistics collected by:

- IBM Tivoli OMEGAMON XE for IMS on z/OS, V4.2 (5698-A34) or later, Application Trace Facility
- OMEGAMON ATF statistics collection enhancements APAR OA36278: Interim Feature 3 (IF3)

For sharing system and group definitions with IBM IMS Problem Investigator for z/OS:

- IBM IMS Problem Investigator for z/OS, V2.3 (5655-R02) or later

For graphing Extract by Interval transit data using the IMS PA dialog:

- GDDM Base: GDDM/MVS™ V3.2 (5695-167) or later
- GDDM Presentation Graphics Facility: GDDM-PGF V2.1 (5668-812) or later

For offloading IMS Log reports to the IMS Tools Knowledge Base report repository:

- IBM Tools Base for z/OS, V1.5 (5655-V93)

Storage

IMS PA executes in a virtual storage region. Region size will vary based on your specific report requirements and the amount of log, monitor and other data file input.

Allow at least 256 MB, which includes storage for:

- IMS PA programs
- Access methods and buffers
- Report queues (most are located above the 16 MB line)

Installations with large numbers of programs and databases may experience greater resource requirements.

Operating system and GDDM requirements are additional.

The primary factors affecting the base amount of storage and CPU time required by an IMS PA monitor report run are the number of PSBs, PCBs, and ddnames that are active during the monitor trace interval.

IMS Performance Analyzer operation

IMS PA produces comprehensive sets of reports and extracts from IMS Log, Monitor, IMS Connect Extensions, and OMEGAMON TRF and ATF data sets. The ISPF-based dialog is used to create and maintain your report and extract requests in Report Sets of type LOG, MON, CEX, TRF, or ATF and generates the JCL to run them using your specified systems and data files.

System and report interval options can be specified at run time. Graphs and export files can be produced from log extracts by time interval. Extracts of total transaction traffic or exception transactions (MSGQ or Fast Path), CPU usage and database update activity can also be created for direct import by external programs such as DB2 or PC-based reporting tools. Report Forms can be used to tailor transit summary and list reports to include only the data fields of interest. Form-based extracts can be created then directly loaded into DB2 tables.

Report Sets

A Report Set defines a selection of reports and extracts and their associated options.

There are five types of Report Set: LOG, MON, CEX, TRF, ATF. The type of Report Set corresponds to the type of input data it is designed to process: from the IMS Log, Monitor, IMS Connect (IMS Connect Extensions), OMEGAMON TRF and ATF. Any number of Report Sets can be defined, but a separate batch job is required for each type of Report Set. One batch job runs one Report Set or runs a selection of reports and extracts from one type of Report Set. The reports and extracts in a Report Set, including multiple program traces, are produced as a group from one pass of the input data sets, without sorting. For shared queue reporting, IMS PA merges the logs from multiple IMS subsystems.

A Report Set can be run on a one-off basis, or run repeatedly against different input each time. Changes are made to Report Sets via the dialog, and immediately affect the next run of the Report Set.

Optionally, a Log Report Set includes the specification of extract files, transaction index, and user-written record processors. These are executed concurrently with IMS PA reports in the same pass of the log data set.

The data to be analyzed by a Report Set can be restricted by date and time. Then for each report, further filtering of the data can be defined by a date-time range or time slot, and by Selection Criteria to restrict reporting to only the objects that you are interested in (such as particular programs, databases, user IDs, LTERMs, and IMS subsystem IDs).

Running Report Sets

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set. This prompts you to check or change your run-time options, such as System Selection or Report Interval, before generating the JCL.

Alternatives to the RUN command are SUB, JCL and JCM, and run-time options are displayed on request:

- The SUBMIT or SUB command directly submits the Report Set for execution.
- The JCL command builds the JCL to execute the Report Set and allows you to edit the job before you submit it.
- The JCLCMD or JCM command builds the JCL, converts the Report Set to a command stream and allows you to edit the job before you submit it.

Object Lists

Selection Criteria for reports and extracts can be specified as a single value or a list of values. Lists of values are specified in Object Lists.

Each Object List is a particular type (for example, Database, Program, Transaction Code). IMS PA verifies that the Object List content and context (for example, numeric or character, maximum value or length) are appropriate to the type.

Object Lists can be defined hierarchically, eliminating duplication, and thereby reducing list maintenance effort and improving the integrity of lists. For example, to define the production databases Object List DBPROD, you could specify the Object List as containing only the names of three other Object Lists PAYROLL, FINANCE and SALES. These three Object Lists could then contain the actual database names for those applications. This can be done for all types of Object Lists and to any depth of hierarchy.

Distributions

IMS PA can produce a large variety of graphs from log and monitor data, showing the distribution of performance measures (such as IWAITs per Call). The graphs can be customized using parameter members called Distributions that specify the limit values and titles for the vertical axis. The graphs are all produced in the same pass of the input data.

Expectations and Averages

Expectation Sets and Averages data sets can optionally be specified for use by the Management Exception report to list log records that are beyond expected limits and calculate accumulated averages. Limits can be defined as absolute values, or defined relative to accumulated averages.

Expectation Sets can optionally be specified for use by the Transaction (MSGQ) Exception and Fast Path (EMH) Transaction Exception reports to identify transactions that perform outside user-defined expectations.

The Expectations and Averages data are presented by the dialog in spreadsheet style for viewing, maintenance, and adjustment.

The following figure shows the components that comprise the Management Exception report. The report processes Log data that can be filtered by specifying Selection Criteria. Object Lists help you specify Selection Criteria more efficiently. The report can highlight performance outside thresholds that you define in Expectation Sets. It can also calculate averages and save them in Averages Data Sets.

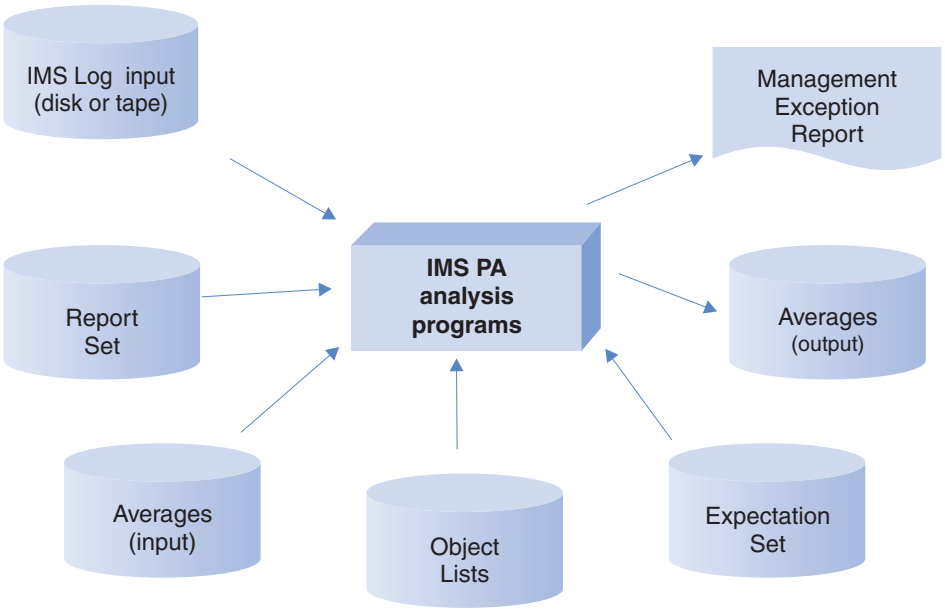

Figure 2. Management Exception report components

Defining systems, groups, and data files

Use dialog options 1 **System Definitions** and 2 **Groups** to define the systems, groups, and files that contain the data for reporting.

IMS PA supports IMS systems with Log, Monitor, TRF, and ATF files, Connect systems with active or archive journal data sets, and groups of these systems. For log reporting on shared queues or data sharing, you can specify groups of IMS subsystems. For combined IMS and Connect reporting, you can specify groups of IMS subsystems and Connect systems.

When you submit a Report Set for batch processing, you specify the system or group to be used for that run. IMS PA builds the JCL using the eligible data sets for that system or group ("excluded" data sets are ignored). For log reporting, you can use the more convenient method of DBRC Log Selection which automatically selects the log files for the specified report interval. Similarly, for IMS Connect reporting, you can use IMS Connect Extensions Automated File Selection to automatically select the journal data sets for the specified report interval. For combined IMS and IMS Connect reporting, automated file selection employs both these utilities.

Shared Queue reporting

An IMS PA Report Set produces reports and extracts from one or more input data sets. For log reporting, these data sets can be from a group of IMS subsystems running in a sysplex environment and using shared queues managed by a Common Queue Server (CQS).

IMS PA merges the multi-subsystem log input by time stamp sequence to produce either composite reports or reports by subsystem.

Specifying IMS Connect systems and event data

To report on IMS Connect event data, you must first identify the IMS Connect systems to IMS PA.

To specify the name of the default IMS Connect Extensions Definitions Data Set, use dialog option 0.5 **IMS Connect Extensions Definitions Data Set**. This is the usual data set that defines the IMS Connect systems and event data that you want to report on. If a Connect system is maintained in a different repository, it can be specified on the Connect System Definition panel. You can then submit your report requests in either of two ways:

- Run a CEX Report Set, specifying the IMS Connect system at run time.
- Select an IMS Connect system or archive data set for reporting, specifying the CEX Report Set at run time.

System definitions in the IMS Connect Extensions Definitions Data Set are defined by IMS Connect Extensions, not IMS PA. However, IMS PA provides facilities to maintain IMS Connect system definitions and groups. The IMS PA definitions remain "local" to IMS PA and do not affect the IMS Connect Extensions Definitions Data Set.

Processing extract and history data sets

IMS PA can produce extract data sets in the form of delimited text files for processing by external programs such as DB2 or PC tools such as IBM Lotus® Symphony® Spreadsheets or Microsoft Excel.

The following reports have extract capability:

- Transaction Exception (MSGQ)
- Fast Path Transaction Exception
- CPU Usage
- Database Update Activity
- Connect Transit Extract (suitable for DB2, not PC tools)
- All Form-based reports

The Transaction History File is used to collect historical performance data, useful for long-term trend analysis and capacity planning.

Complementary IBM products

IMS Performance Analyzer complements the following IBM products in the investigation of transaction performance related problems.

IBM Transaction Analysis Workbench for z/OS

Transaction Analysis Workbench is a tool for analyzing problems with the performance or behavior of z/OS-based transactions. Transaction Analysis Workbench provides a platform for investigating logs and other historical data collected during transaction processing and system operations. Transaction processing is often complex. Modern applications frequently interact with external subsystems and use system services. Pinpointing the cause of a problem can be difficult. Transaction Analysis Workbench extends the scope of traditional transaction analysis techniques, enabling you to more easily identify problems caused by external events. You can use Transaction Analysis Workbench with the following IBM tools:

- IMS Performance Analyzer - to look outside of IMS for the cause of problems, in particular DB2 and IBM MQ

- CICS Performance Analyzer - to bridge the gap between CICS and IMS for CICS-DBCTL

IBM Tivoli OMEGAMON XE for IMS on z/OS (5698-A34)

IMS Performance Analyzer provides reporting on transaction activity data collected by the following components of OMEGAMON XE for IMS:

- OMEGAMON Transaction Reporting Facility (TRF) collects performance and resource utilization data for every IMS transaction. The TRF transaction accounting statistics are written to the IMS log and later extracted by the TRF Extractor utility. IMS Performance Analyzer provides a suite of reports in **TRF** Report Sets to interpret and summarize the transaction accounting statistics in specified TRF Extractor output data sets. TRF data includes CPU time, virtual storage usage, and response time of a transaction.
- OMEGAMON Application Trace Facility (ATF) collects data on external subsystem events (DB2, IBM MQ), BMP and MPP scheduling and termination events, the region where a transaction is executed, occurrence of DLI DB, IMS TM, and message queue calls. The ATF application-level accounting statistics are written to the active ATF journal (VSAM KSDS). IMS Performance Analyzer provides a suite of reports and extracts in **ATF** Report Sets.

IBM IMS Connect Extensions for z/OS (5655-S56)

IMS Connect Extensions provides instrumentation for IMS Connect. The tool continuously records IMS Connect events, which you can analyze with IMS Performance Analyzer using the suite of reports provided in **CEX** Report Sets. The input data for reporting is provided by explicitly specifying IMS Connect Extensions journal data sets, or by requesting the IMS Performance Analyzer automated file selection utility to automatically select the journal data sets for your specified systems and report period.

IBM IMS Problem Investigator for z/OS (5655-R02)

IMS Problem Investigator (IMS PI) allows you to interactively investigate IMS and related logs. It helps you pinpoint the cause of problems highlighted by IMS Performance Analyzer. Transaction tracking is facilitated by using the IMS Transaction Index (X'CA01' record) and IMS Connect Transaction Index (X'CA20' record) created by IMS Performance Analyzer. To make the two products easier to use together, they share definitions for systems and groups: you only need to maintain the definitions in one of the tools.

The following diagram illustrates the cooperation between IMS Performance Analyzer, IMS Problem Investigator, and IMS Connect Extensions. When IMS Connect event details in IMS Connect Extensions journals are merged with IMS (and related) logs, IMS Performance Analyzer and IMS Problem Investigator can provide a comprehensive insight into the lifecycle of IMS transactions.

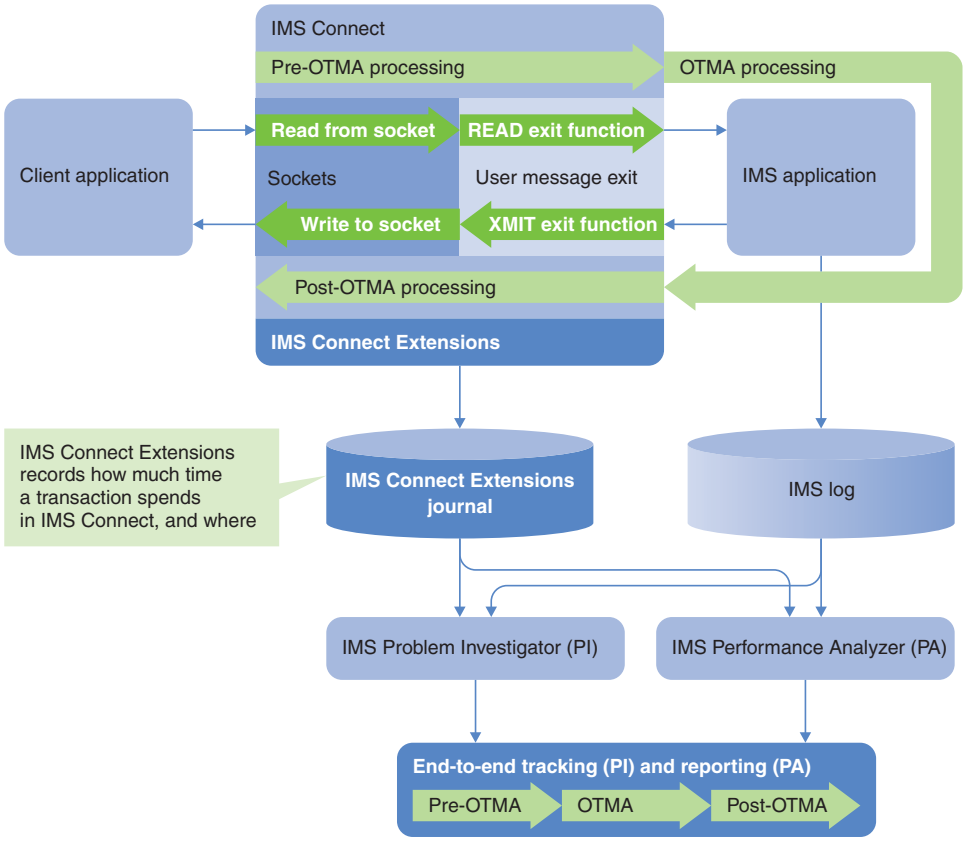

Figure 3. IMS PI, IMS PA, and IMS Connect Extensions cooperation

IMS Problem Investigator provides interactive facilities for the presentation, navigation and interrogation of log data of different types and across systems. IMS Problem Investigator knows about log records and their contents, and allows you to drill down from file to record to field to determine the essence of a problem.

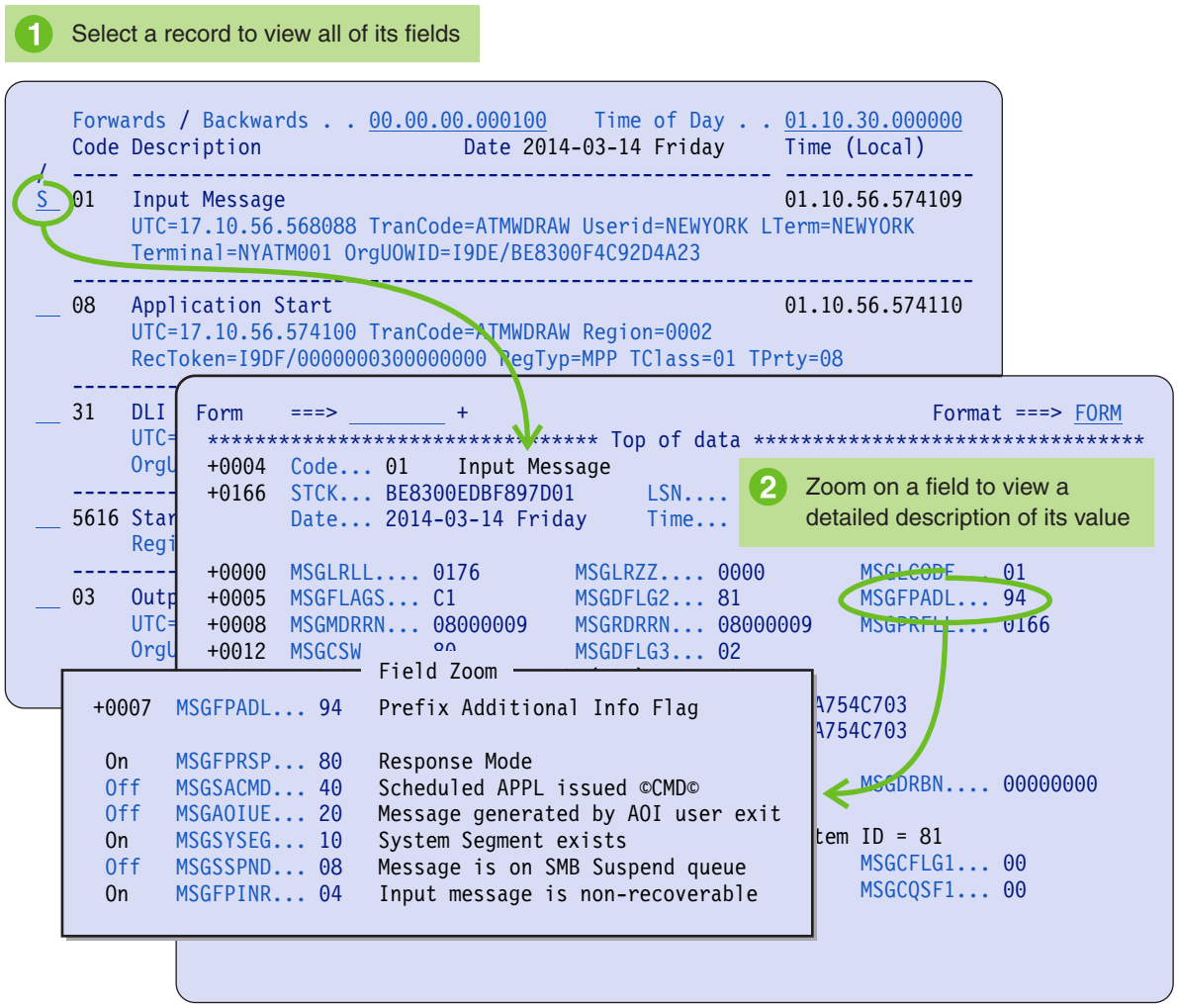

Figure 4. IMS Problem Investigator: Drill down from file to record to field

IMS Performance Analyzer can highlight problem transactions which can then be investigated in detail using IMS Problem Investigator.

Figure 5. IMS Problem Investigator: Track records in the same transaction

Because IMS processes large workloads, records from the same transaction can be separated by thousands of records from other transactions, making it difficult to trace the flow of only one of those transactions. Moreover, different record types have different fields that relate them to a transaction, making them inaccessible using conventional filtering and searching techniques. With the IMS Problem Investigator tracking facility, you can find a record from the relevant transaction, and then display just the records from that transaction. IMS Problem Investigator tracks all transaction records, finding the related IMS log and monitor, CQS, IMS Connect, OMEGAMON TRF, ATF, DB2, IBM MQ, and SMF records, hiding others that are not part of the transaction.

Service updates and support information

Service updates and support information for this product, including software fix packs, PTFs, frequently asked questions (FAQs), technical notes, troubleshooting information, and downloads, are available from the web.

To find service updates and support information, see the following website:

http://www.ibm.com/support/entry/portal/Overview/Software/Information_Management/IMS_Tools

Product documentation and updates

IMS Tools information is available at multiple places on the web. You can receive updates to IMS Tools information automatically by registering with the IBM My Notifications service.

Information on the web

The IMS Tools Product Documentation web page provides current product documentation that you can view, print, and download. To locate publications with the most up-to-date information, refer to the following web page:

http://www.ibm.com/software/data/db2imstools/imstools-library.html

You can also access documentation for many IMS Tools from IBM Knowledge Center:

http://www.ibm.com/support/knowledgecenter

IBM Redbooks publications that cover IMS Tools are available from the following web page:

http://www.redbooks.ibm.com

The Data Management Tools Solutions website shows how IBM solutions can help IT organizations maximize their investment in IMS databases while staying ahead of today's top data management challenges:

http://www.ibm.com/software/data/db2imstools/solutions/index.html

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To register with the My Notifications service:

1. Go to http://www.ibm.com/support/mysupport
2. Enter your IBM ID and password, or create one by clicking **register now**.
3. When the My Notifications page is displayed, click **Subscribe** to select those products that you want to receive information updates about. The IMS Tools option is located under **Software** > **Information Management**.

4. Click **Continue** to specify the types of updates that you want to receive.
5. Click **Submit** to save your profile.

How to send your comments

Your feedback is important in helping to provide the most accurate and high-quality information. If you have any comments about this book or any other IBM product documentation, use one of the following options:

- Use the online reader comment form, which is located at http://www.ibm.com/software/data/rcf/.
- Send your comments by email to comments@us.ibm.com. Include the name of the book, the part number of the book, the version of the product that you are using, and, if applicable, the specific location of the text you are commenting on, for example, a page number or table number.

Accessibility features

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use a software product successfully.

The major accessibility features in this product enable users to perform the following activities:

- Use assistive technologies such as screen readers and screen magnifier software. Consult the assistive technology documentation for specific information when using it to access z/OS interfaces.
- Customize display attributes such as color, contrast, and font size.
- Operate specific or equivalent features by using only the keyboard. See the following publications for information about accessing ISPF interfaces:
  - *z/OS ISPF User's Guide, Volume 1*
  - *z/OS TSO/E Primer*
  - *z/OS TSO/E User's Guide*

  These guides describe how to use the ISPF interface, including the use of keyboard shortcuts or function keys (PF keys), include the default settings for the PF keys, and explain how to modify their functions.

Chapter 2. Overview of the reports

IMS Performance Analyzer provides a comprehensive suite of reports to help you to manage transaction performance and to monitor resource utilization in IMS TM and DB systems.

Reports and extracts can be produced from IMS Logs, Monitor files, IMS Connect Extensions journals, and OMEGAMON TRF files and ATF journals. Standard reports are available, or you can request tailored Form-based reports.

Log reports

Log reports process IMS Log data. IMS PA has a variety of log reports available on request. The many reports are intended for people with different interests in IMS system performance monitoring and tuning.

Log reports can be categorized in a number of ways. Here, the reports are categorized by the type of log data they process:

However, elsewhere in this documentation, the reports are described according to the IMS PA dialog, which presents the reports in functional categories.

Message Queue transaction and Full Function database reports

The MSGQ transaction and Full Function database reports are grouped by intended audience into Management reports, Analysis reports, and Detail reports.

Form-based Transaction Transit reports can be constructed to suit many purposes.

Management reports

Management reports let managers know whether IMS is working within expected limits. The management reports are:

Dashboard
The "Dashboard report" on page 330 provides a quick overview of critical system performance indicators, including transaction throughput and IMS system resources. It can highlight potential performance problems quickly, providing a springboard to other reports that provide more detailed information.

Management Exception
The "Management Exception report" on page 331 shows whether critical values are within specified limits, and it gives summary values of certain indicative information. Typically, you will look at this report first to see if any of the values are an exception to what you expected or what is typical. When there is a problem, you can go to other IMS PA reports for additional, more detailed information.

Transaction Transit Graphic Summary
The "Transaction Transit Graphic Summary report" on page 310 consists of four graphs, summarizing daily transaction processing for:
- Mean transit time

- User-specified percentile transit time
- Transaction response count
- Responses per second

The graphs can help you determine at a glance whether abnormal transit times exist and whether the input queue, processing, output queue, or program switching is a likely bottleneck.

Transaction Transit Extract by Interval and Graphs
The "Transaction Transit Extract by Interval" on page 310 allows creation of extract files of transaction transit time by time interval data. You can then use this data to get pictures of system performance using IMS PA graphing facilities, or by exporting for manipulation by external programs or downloading to a PC.

Transaction Exception
The "Transaction Exception report and extract" on page 313 shows transaction performance information that affects response time. The report can be ordered by Transaction Code, User ID, Message Class, or Time of Input, optionally with a breakdown by transaction code. Optionally, two extract files can be produced containing detail records of all transaction activity, or exception transactions only.

Analysis reports

Analysis reports are intended for administrators and analysts who want operating information in easy-to-read, summary format. The analysis reports are:

Transaction Transit Analysis
The "Transaction Transit Analysis report" on page 305 shows the times for the components of transaction transit time:
- Input queue time (local or CQS)
- Processing time
- Output queue time
- Output shared queue (CQS) time
- Output local queue time
- Program switch time

This report can be ordered by:
- Transaction code
- LTERM
- Transaction code within LTERM
- Message Class
- Line or VTAM node
- Time of day

The display of transit time by time period helps you identify periods of poor response.

Transaction Transit Statistics
The "Transaction Transit Statistics report" on page 308 consists of statistical distribution graphs of the transit time components listed in the preceding report.

Transaction Resource Usage
The "Transaction Resource Usage report" on page 335 provides a comprehensive overview of transaction resource usage, including:
- Scheduling statistics, including WFI
- CPU usage
- DL/I call statistics

- Enqueue statistics
- DBCTL DB and I/O usage

Resource Availability

The "Resource Availability report" on page 336 provides a breakdown of active, idle and unavailable time for regions, lines, programs, transactions, and databases. The time that WFI and pseudo-WFI regions spent waiting for input is also shown.

CPU Usage

The "CPU Usage report and extract" on page 338 give statistics on CPU time and elapsed time for:

- Regions
- Transactions
- Programs

This report can help you determine such things as who is using too much CPU time or, conversely, what programs or transactions, in which regions, are in a wait state for too long.

Internal Resource Usage

The "Internal Resource Usage reports" on page 340 provides statistics on the use of various IMS resources and pools. The statistics help you determine how resources and pools are being used and where inefficiencies exist.

MSC Link Statistics

The "MSC Link Statistics report" on page 343 provides summary information on the overall usage of MSC links and a detailed breakdown of Send and Receive data for each MSC link.

Message Queue Utilization

The "Message Queue Utilization report" on page 345 contains information on the use of message queues. This information can help you:

- Balance the I/O between long and short message data sets
- Adjust record and buffer sizes for the most efficient use of these two data sets

Thus this report helps you reduce storage and minimize I/O.

Database Update Activity

The "Database Update Activity report and extract" on page 346 can help you determine the cost of database calls. They show the number of blocks updated and how many updates of each type were made for each database.

OSAM Sequential Buffering

The "OSAM Sequential Buffering report" on page 349 provides detailed I/O and buffer-usage statistics that allow you to assess the benefit of OSAM sequential buffering.

Deadlock

The "Deadlock report" on page 350 provides a comprehensive analysis of deadlock events. The report provides a list of all deadlock events in the log, similar to DFSERA30. In addition the report summarizes deadlock activity to show at a glance:

- the frequency of each losing transaction/database combination
- the associated winning transaction/database combinations

The information provided is a useful aid for tuning applications and adjusting scheduling parameters to avoid this expensive overhead. Deadlocks involving DB2 are also reported.

System Checkpoint
The "System Checkpoint report" on page 351 provides a detailed analysis of IMS internal checkpoint activity. The report provides details of your IMS resources, including:
- Databases, with system definition information
- Transactions, with system definition information and basic usage indicators
- Terminals, with system definition information and basic usage indicators

The report also provides a summary of checkpoint activity, including:
- Breakdown of checkpoint records by type
- Frequency and overhead of internal checkpoint processing

BMP Checkpoint
The "BMP Checkpoint report" on page 352 provides an analysis of BMP checkpoint frequency that can affect online performance and system restartability. The detailed List report provides a breakdown of individual BMP checkpoint activity. The Summary report provides an overview of each BMP program.

Log Gap Analysis
The "Gap Analysis report" on page 354 shows periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS to slow down.

Cold Start Analysis
The "Cold Start Analysis report" on page 355 provide a snapshot of in-train activity in the event of a cold start to determine what transactions were lost from the IMS message queue, what were the incomplete units of work, what database changes were made and not backed-out, and what external subsystem activity was left in doubt.

ESAF Trace
The "ESAF Trace report" on page 388 lists each connect and disconnect of an external subsystem.

Detail reports

Detail reports help analysts and programmers solve problems. The detail reports are:

Transaction Transit Log
The "Transaction Transit Log report" on page 309 shows the transit activity of each message originating from a logical terminal or program switch. It can help you diagnose problem areas. This report is similar to the one produced by DFSILTA0, but provides shared queue reporting for multiple IMS subsystems.

Region Histogram
The "Region Histogram report" on page 348 is a graphic display of region activity. It shows the times a region is active or idle, and the patterns of transaction scheduling in each region.

DC Queue Manager Trace
The "DC Queue Manager Trace report" on page 383 shows a time-sequenced list of each TM event, such as input, message enqueue, get

unique, output, and free DRRN (disk relative record number). This report also shows the content of each input message. You can request the DC UOW Tracker report. This enables you to trace transaction message flow using the IMS Tracking UOW.

Database Trace
The "Database Trace report" on page 385 shows the *before* and *after* versions of each changed segment and, for each change, identifies the application program, transaction, region, and time.

Transaction History File

The "Transaction History File" on page 316 is used to collect historical performance data, useful for long-term trend analysis and capacity planning. Information is summarized for each transaction code over a short time interval, including transaction transit, response and CPU times, as well as DLI call statistics. Data is provided in a format suitable for loading directly into DB2, from where you can run queries or produce reports.

Fast Path EMH transaction and Fast Path database reports

The Fast Path EMH transaction and Fast Path database reports are grouped by intended audience into Management reports, Analysis reports, and Detail reports.

Management reports

Management reports let managers know whether IMS is working within expected limits. The management reports are:

Fast Path Transit Extract by Interval and Graphs
The "Fast Path Transit Extract by Interval" on page 361 allows creation of extract files of Fast Path transit data by time interval. You can then use this data to get pictures of system performance using IMS PA graphing facilities, or by exporting for manipulation by external programs or downloading to a PC.

Analysis reports

Analysis reports are intended for administrators and analysts who want operating information in easy-to-read, summary format. The analysis reports are:

Fast Path Transit Analysis
The "Fast Path Transit Analysis report" on page 359 shows the times for the components of transaction transit time:
- Input queue time
- Processing Time
- Output queue time
- Global input and output queue times

This report can be ordered by:
- Transaction Code
- Routing Code
- User ID
- Time of day

The display of transit time by time period is useful in isolating periods of high response time during the day.

Fast Path Resource Usage and Contention
The "Fast Path Resource Usage and Contention report" on page 366 provides statistics on the use of various Fast Path resources, including:
- DEDB databases and areas
- VSO
- Buffers
- Locks
- Logging
- Transaction throughput

Fast Path Database Call Statistics
The "Fast Path Database Call Statistics report" on page 368 shows DEDB and MSDB DL/I call statistics, broken down by transaction code.

IFP Region Occupancy
The "IFP Region Occupancy report" on page 369 provides approximate region occupancy rates for IFP regions.

EMH Message Statistics
The "EMH Message Statistics report" on page 370 contains information on the number and length of EMH messages that are processed by balancing groups and shared EMH queues.

DEDB Update Activity
The "DEDB Update Activity report" on page 371 provides information on the update activity against your DEDB databases.

VSO Statistics
The "VSO Statistics report" on page 373 provides detailed statistics on VSO resource usage, including:
- SHARELVL 0/1 Data spaces
- SHARELVL 2/3 Coupling Facility structures
- SHARELVL 2/3 Lookaside buffers
- DEDB Area data set I/O

Detail reports

Detail reports help analysts and programmers solve problems. The detail reports are:

Fast Path Transit Log
The "Fast Path Transit Log report" on page 360 shows the transit activity of each EMH transaction processed by an IFP region. It can help you isolate and diagnose problem transactions.

Fast Path Transaction Exception
The "Fast Path Transaction Exception report and extract" on page 364 series of reports provide detailed and summary information about IFP transactions, as well as message queue transactions that use Fast Path databases. Optionally, two extract files can be produced containing detail records of all IFP transaction activity, or exception transactions only. The content of these reports and extracts is similar to that produced by the Fast Path Log Analysis Utility DBFULTA0.

DEDB Update Trace
The "DEDB Update Trace report" on page 386 provides a record of all DEDB changes, identifying application program, user ID, region and time.

DBCTL log reports

DBCTL has neither transactions nor terminal end users in the traditional IMS sense. It does, however, work on behalf of transactions entered by CCTL terminal users. DBCTL generates log data when a CCTL transaction schedules a program to access DBCTL databases.

The log reports that apply to DBCTL are:

- "Transaction Resource Usage report" on page 335
- "Resource Availability report" on page 336
- "CPU Usage report and extract" on page 338
- "Internal Resource Usage reports" on page 340
- "Database Update Activity report and extract" on page 346
- "Fast Path Resource Usage and Contention report" on page 366
- "Fast Path Database Call Statistics report" on page 368
- "DEDB Update Activity report" on page 371
- "VSO Statistics report" on page 373
- "Database Trace report" on page 385 (Full Function)
- "DEDB Update Trace report" on page 386
- Form-based Transit reports using, for example, the following sample report forms:

  "DBCTLIST: DBCTL List report" on page 241
  List of DBCTL Transactions

  "DBCTSUMM: DBCTL Summary report" on page 241
  Summary of DBCTL Transactions

ATF Enhanced Summary reports

The ATF Enhanced Summary reports contain detail and statistics from the OMEGAMON ATF Enhanced Summary record that are written to the IMS log.

Analysis extracts and reports

Analysis reports are intended for administrators and analysts who want operating information in easy-to-read, summary format. The analysis reports are:

Extract
The ATF Enhanced Summary Extract creates CSV extracts of the ATF Enhanced Summary record fixed part of the record, and optionally, up to six repeating sections. The HEADER section is always included; the six sections are as follows:

- DATABASE
- DLI DB
- DLI TM
- DB2
- MQ
- OTHER

Transaction Analysis
The ATF Enhanced Transaction Analysis report, when run as a list report, shows you the elapsed and CPU times of individual transactions. You can also run this as a summary report to see a higher level overview.

DLI Call Analysis
The ATF Enhanced DLI Call Analysis report is useful for showing database activity within transactions. You can produce a list report that breaks down database activity within each transaction by call type, or a summary report.

DB2 Call Analysis
The ATF Enhanced DB2 Call Analysis report is useful for showing DB2 SQL call activity within transactions. You can produce a list report that breaks down DB2 activity within each transaction by call type, or a summary report.

MQ Call Analysis
The ATF Enhanced MQ Analysis report is useful for showing MQ activity within transactions. You can produce a list report that breaks down MQ activity within each transaction by call type, or a summary report.

Monitor reports

The IMS PA monitor reports are organized by level of detail and area of analysis into categories.

The categories are:
- Region Activity Summary
- Region Activity Analysis
- System Analysis
- Resource Usage
- Fast Path Analysis
- Monitor Data Analysis

All reports are optional and can be selected as required to satisfy the various analysis requirements of management, analysts, and programmers.

Reporting options let you tailor reports to your needs. They include:
- ESAF Integration. External Subsystem calls are integrated into all Region and Program/Trancode reports. When activated, ESAF call statistics are reported for each subsystem and contribute to the total call and IWAIT counts for regions and program/trancodes.
- Alternate Sequencing. Summarized monitor reports can be ordered in an alternate sequence. By default, the reports are ordered by name, such as Region ID, Program name, Transaction Code and Database name. Alternatively, you can request that the reports be ordered (in descending sequence) by any one of the following:
  - Occupancy. The elapsed time that the resource is scheduled or in use. For example, the busiest regions or programs.
  - Calls. The time spent by the resource performing DL/I or other types of calls. For example, transactions with the most DL/I call activity.
  - Delay. The time spent by the resource waiting for IWAIT events to complete. For example, the databases which had to wait the longest for I/O to complete.

  When Alternate Sequencing is requested, a limit can also be specified to restrict the number of resources reported. You can specify a fixed number, for example the 10 worst performing databases, or you can specify a percentage, for example the top 10% busiest regions.
- Report Interval. Time ranges let you select a specific part of the monitor trace data. You can specify a time range which applies globally to all IMS PA monitor reports, and to restrict this time period further, you can specify a time range individually for the Transaction by Time Period, Region Histogram, and Program Trace reports.

- Time Interval. Reports can be printed for each *nn* minutes of trace, for each trace, or for the cumulative activity of multiple traces.
- Reporting of VSAM IWAITs. VSAM IWAITs with an elapsed time that is less than a specified value are not reported as I/O IWAIT activity. This lets you exclude VSAM IWAITs that do not result in actual I/O activity.
- Distributions. Optionally, distribution graphs can be produced by applicable reports. Distribution titles and intervals can be modified as required.
- Application and DDgroup Selection. Sets of PSB names can be reported separately as application groups. Likewise, sets of DDnames can be reported as DDgroups; for example, DDnames could be grouped by data set type (VSAM or OSAM) or data set placement (VOLSER), or application.
- Program and I/O Performance Thresholds. Thresholds can be set for monitoring three important program and I/O performance indicators: number of IWAITs per call, DL/I call elapsed time, and I/O IWAIT elapsed time. An Exception Listing report is printed each time a threshold value is exceeded.
- Defaults are provided to satisfy typical reporting requirements.

Region Activity Summary reports

The Region Activity Summary reports summarize and correlate region, program, transaction, and database activity for the IMS system.

These reports provide an overview of system activity and a means of identifying problem areas for further investigation with system and program level reports. Use of these reports for trend analysis and day-to-day monitoring of the system is facilitated because reporting is in terms of rates, ratios, percentages, and elapsed times per event.

The Region Activity Summary reports are:

- "Schedule/Transaction Summary report" on page 511
- "Region Summary report" on page 511
- "Program Summary report" on page 511
- "Database IWAIT Summary report" on page 511
- "Transactions by Time Period Options" on page 505

Region Activity Analysis reports

Detail reports analyze program activity for each active MPP, IFP, or BMP region and for specified application and data set groups. A Database IWAIT Analysis report gives details of program related IWAIT activity. Exception Listing report entries are provided when certain performance monitoring thresholds are exceeded. An Enqueue/Dequeue Trace report identifies program isolation bottlenecks. The Region Histogram report graphically presents the interrelationship of region activity.

Optionally, distributions are used extensively throughout the reports.

The Region Activity Analysis reports are:

- "Region Analysis report" on page 512 (with Region Detail)
- "Application Detail report" on page 512
- "Database IWAIT Analysis report" on page 513
- DDgroup via "DDname Grouping Options" on page 508
- "Performance Exception reports" on page 514 (with Exception Listing)

- "Enqueue/Dequeue Trace report" on page 516
- "Region Histogram report" on page 517

System Analysis reports

The System Analysis (Total System IWAIT) reports provide a summary and detailed account of the IWAIT activity of the entire IMS system.

These IWAIT events include the following:
- System data sets
- Databases (Full Function and Fast Path)
- ACBLIB Block loading
- Message Format services
- Scheduler
- Checkpoints
- Line/VTAM node
- Storage Pools
- MSC

The System Analysis reports are:

- "Total System IWAIT reports" on page 519 (Summary and Detail)

Program Analysis reports

The Program Analysis reports provide detailed information on all aspects of application processing.
- Detailed analysis and documentation of the database activity of each MPP, IFP, or BMP, and the program activity against each database and data set
- Detailed trace of specified program schedules
- Detailed breakdown of VSAM activity for IMS batch jobs

The Program Analysis reports are:

- "Program Activity Detail reports" on page 520
- "Program Trace report" on page 522
- "Batch VSAM Statistics report" on page 523

Resource Usage reports

The options for Resource Usage reports are described here.

The Resource Usage reports provide a detailed analysis of the usage of IMS resources, including the following:
- Buffer Pools; including Message Queue, OSAM, VSAM, and Message Formatting
- Latches
- Communication
- Multiple Systems Coupling
- External Subsystems
- Synchronous Callouts

The Resource Usage reports are:

- "Buffer Pool and Latch Statistics reports" on page 524
- "Communication reports" on page 525
- "MSC reports" on page 527
- "ESAF report" on page 528
- "Synchronous Callout report" on page 528

Fast Path Analysis reports

The Fast Path analysis reports provide an analysis of all Fast Path resources and functions, including Fast Path buffers, BALG and shared EMHQ, OTHREADs, DEDB IWAITs, DEDB resource contention, and VSO. The reports are not available from DB Monitor data.

The Fast Path analysis reports are:

- "DEDB Resource Contention report" on page 529
- "Fast Path Buffer Statistics report" on page 530
- "BALG/Shared EMHQ Analysis report" on page 531
- "OTHREAD Analysis report" on page 532
- "VSO Summary report" on page 533

Monitor Data Analysis report

The Monitor Data Analysis report contains the Monitor Record Trace report.

The "Monitor Record Trace report" on page 534 formats the records from the monitor input file into a chronological listing.

Batch Program reports

Although the entire collection of IMS PA monitor reports could conceivably be obtained from processing a DB Monitor trace, only a subset of the reports are meaningful for DB analysis. The rest of the reports are TM related and would provide little or no relevant information about DB.

Of the preceding reports, the following subset is available for analysis of DB Monitor data:

Region Summary and Detail (Region 1)
Statistics and distributions for database calls and IWAITs. Most of this information is also available with the Program Activity Detail reports, however Calls/sec and IWTs/sec are unique values in this report.

Database IWAIT Summary (Region 1)
A summary of IWAIT activity for each data set and specified DDgroup.

Database IWAIT Analysis with distributions
A report of IWAIT activity by DDname. This report can be used in place of, or in addition to, the Total System IWAIT reports.

DDgroup with distributions
A report of IWAIT activity by DDname for each user-defined DDgroup.

Exception Listing
A listing of performance threshold violations. The other reports included in the suite of Performance Exception reports are applicable only to TM.

Total System IWAIT Summary and Detail with distributions
A complete accounting of IWAIT activity by data set type (OSAM, VSAM, DEDB, MSDB) and DDname.

Program Activity Detail
A comprehensive collection of reports for database call analysis, plus a detailed trace of batch program IWAIT and CALL events for analysis of program design problems.

Program Trace
A detailed trace of the events associated with a program schedule.

Batch VSAM Statistics
A detailed breakdown of VSAM activity for IMS batch jobs.

Buffer Pool and Latch Statistics
A report on the access status of IMS buffers and the contents of the IMS latch counters.

ESAF A summary of the external subsystem activity of IMS programs.

Monitor Record Trace
The monitor input records are formatted and reported chronologically.

You should decide which reports best suit your requirements. The following reports are often the most useful:
- Database IWAIT Analysis and distributions.
- DDgroup Detail and distributions.
- Program Analysis reports (either PSB Details or PSB-Transaction Code Analysis provide the same information). Note that CPU time is not collected for DB Monitor so CPU shows as 0.000 (zero) in Program Analysis reports.
- If a program or database problem requires more detail, you can do a separate run to obtain the Program Trace report. Use the From and To date and time report options to control the duration of the Program Trace.

DBCTL monitor reports

DBCTL has neither transactions nor terminal end users in the traditional IMS sense. It does, however, work on behalf of transactions entered by CCTL terminal users. DBCTL monitoring provides data about the processing that occurs when a CCTL transaction accesses DBCTL databases.

The Monitor reports that apply to DBCTL are:
- "Region Activity Summary reports" on page 35
- "Region Activity Analysis reports" on page 35
- "Total System IWAIT reports" on page 519 (Summary and Detail)
- "Program Activity Detail reports" on page 520
- "Program Trace report" on page 522
- "Buffer Pool and Latch Statistics reports" on page 524
- "Fast Path Analysis reports" on page 37
- "Monitor Record Trace report" on page 534

IMS Connect reports

The IMS PA reports that analyze IMS Connect event data are organized by level of detail and area of analysis into categories.

The categories are:
- Transaction Transit
- Transaction Transit (Form-based)
- Resource Usage
- Trace

Form-based Transaction Transit reports can be constructed to suit many purposes.

All reports are optional and can be selected as required to satisfy the various analysis requirements of managers, analysts, and programmers.

Reporting options let you tailor reports to your needs. They include:

- Time Interval. Some reports can be summarized by time interval.
- Selection Criteria. You can filter the data based on field values thereby focusing your reports on the information that you are interested in.
- Report Interval. Time ranges let you select a specific part of the IMS Connect data. At run-time, you can specify a time range which applies to all the IMS Connect reports.
- Defaults are provided to satisfy typical reporting requirements.

Transaction Transit reports

These reports provide performance statistics to measure the performance of your IMS Connect transactions. Transaction Transit (response) time is broken down into its components; Input, Processing (by OTMA), Acknowledgement from the client and Output. They can help identify any bottlenecks in transaction flow, and are used for monitoring system performance, gathering diagnostic information, and tuning IMS.

The IMS Connect transaction transit reports are:

- "Connect Transit Analysis report" on page 577
- "Connect Transit Log report" on page 579
- "Connect Transit Extract" on page 580

Resource Usage reports

These reports contain detailed and summary information on the use and availability of various IMS Connect resources including TCP/IP Ports and Tpipes.

The IMS Connect resource usage reports are:

- "Connect Port Usage report" on page 592
- "Connect Resume Tpipe report" on page 593
- "Connect ACK/NAK report" on page 595
- "Connect Exception Events report" on page 597
- "Connect Gap Analysis report" on page 598

Trace report

These reports provide detailed analyses of individual IMS Connect transit event records. Trace reports are typically used to investigate point in time performance problems because they provide all available information. To focus on the desired problem area or to minimize the size of the report, narrow the report interval and/or specify Selection Criteria.

The IMS Connect Trace reports are:

- "Connect Transit Event Trace report" on page 599

Form-based Transaction Transit reports

Report Forms allow you to personalize the format and content of Transaction Transit reports and extracts to include only the information that interests you.

Report Form features include:

- You can select fields from all the IMS and Connect fields available to IMS Performance Analyzer. For a list of IMS Performance Analyzer field names used in Form-based reporting, see Chapter 41, “Glossary of Report Form field names,” on page 777.
- List and Summary Form-based reporting is available from both Log and Connect Report Sets.
- Sample report forms are supplied with IMS Performance Analyzer to provide a broad selection of functional reports:
  - For Log reporting, see “Sample forms for Log reporting” on page 236.
  - For Connect and Combined reporting, see “Sample forms for Connect and Combined reporting” on page 237.
- You can use IMS Performance Analyzer to load Form-based extracts into DB2 tables.
- Combined IMS and Connect reporting is available from Connect Report Sets using Report Forms that specify both IMS and Connect fields. By reporting against a Group of IMS and Connect systems, you can get a complete end-to-end transit picture of IMS Connect transactions.

OMEGAMON TRF reports

Transaction performance and resource utilization statistics are collected by OMEGAMON subsystems with the Transaction Reporting Facility (TRF) Trace running. TRF data can be written to an SMF data set or the IMS Log. IMS Performance Analyzer processes TRF records extracted from the IMS Log by the TRF post-processor.

IMS Performance Analyzer provides a set of reports in the TRF Report Set to process the TRF Extractor records. The dialog presents the TRF reports grouped by functional category to allow you to request reports individually or by category. The categories are:
- Database Usage reports
- Message Queue reports
- Trace reports

Database Usage reports

These reports provide performance statistics to measure IMS and DB2 database activity.
- “DLI Call List report” on page 631
- “DLI Call Summary report” on page 633
- “DB2 Call List report” on page 635
- “DB2 Call Summary report” on page 636

Message Queue reports (Form-based)

Form-based reports give you flexibility in message queue reporting. By using Report Forms, you can tailor the format and content of your reports. You can request just the fields of interest, and control the presentation order and format. You can create Form-based extracts and load them into DB2 tables.

The Message Queue reports provide performance detail about every transaction traced by OMEGAMON TRF.
- “Form-based Message Queue List report and extract” on page 639
- “Form-based Message Queue Summary report and extract” on page 643

Trace reports

The Record Trace reports format the TRF Extractor records for ease of analysis. The trace provides a list of transactions, each with detailed information about every event in the life of that transaction. At a glance, you can see when a transaction starts, followed by all the events associated with the transaction in the order they occurred.

• "TRF Record Trace report" on page 648

OMEGAMON ATF reports

OMEGAMON Application Trace Facility (ATF) provides application-level accounting statistics of DLI, DB2, and MQ calls, call times, and CPU utilization.

The analysis of the data collected by ATF can be used to:

- Identify transaction response-time components
- Fine-tune applications
- Understand how application programs operate

IMS Performance Analyzer provides a set of reports in the ATF Report Set to process ATF journals. The dialog presents the reports grouped by functional category. You can request reports individually or by category. The categories are:

- Transaction Transit reports
- Trace reports
- Extracts

Transaction Transit reports

These reports provide application-level accounting.

• "ATF Transit List report" on page 664
• "ATF Transit Summary report" on page 665

Trace reports

The Record Trace reports provide three levels of detail for application-level analysis of DLI and external subsystem (DB2 SQL and MQ adapter) calls.

• "ATF Record Trace report" on page 667

Exception Transaction Extract

The "ATF Exception Transaction extract" on page 668 is an ATF data reduction process creating a data set of transactions that generated an exception (ABEND or long response time).

There are two types of data set. You can choose to extract to either or both types:

- ATF Journal, a pre-allocated KSDS
- REPRO file, a sequential data set for archival purposes which you can later load into an empty ATF journal for reporting

Report command format

IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

The standard command format for producing reports and extracts is:

```
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----+----8

NAME      COMMAND      OPERANDS                  comments             ignored
*
*  comments
*
```

NAME

The name field labels the command statement. It contains 1 to 8 alphanumeric characters and must start in column 1. The name is only used by the DISTRIBUTION command, and it enables the Distribution to be used by its associated report.

COMMAND

The command is required and is one of the following:

IMSPALOG
: Requests Log reporting.

IMSPAMON
: Requests Monitor reporting.

IMSPACEX
: Requests IMS Connect reporting or combined IMS and IMS Connect Form-based reporting.

IMSPATRF
: Requests OMEGAMON TRF reporting.

IMSPAATF
: Requests OMEGAMON ATF reporting.

DISTRIBUTION
: Defines a Distribution for use by monitor or log reporting. Distributions must appear at the end of command input, after the EXECUTE statement.

COPY Reads precoded commands from the `CMDLIB DD` command library.

IMSPALOG, IMSPAMON, IMSPACEX, IMSPATRF, and IMSPAATF commands cannot coexist; they must be specified in separate jobs.

OPERANDS

Operands request specific reports or processing by IMS PA, and one or more operands are required for most commands. Operands must start on the same line as the command. Operands for the one command must be separated by commas, and may be continued across several lines. When operands have values, they can be specified in parentheses or with an equate sign. For example: `DDNAME(RPTOUT)` or `DDNAME=RPTOUT`

Most operands can be abbreviated by using the first few characters of the operand name. For example: `DD` for `DDNAME`

Some operands are common to many reports and have common characteristics. For example:

FROM(*date*,*time*)**,TO(***date*,*time*)** **or START(***date*,*time*)**,STOP(***date*,*time*)**
: The report period. Date is in the format *yyyy/mm/dd*. Time is in the format *hh*:*mm*:*ss*:*th*.

DDNAME(*ddname*)**
: The DDname of the report output file. For some reports, the

DDname is individually specified, whereas others use a global specification. The DDname will always default if not specified. To segregate report output, the DDnames should be unique within the job. For report output and extract data sets, avoid using DDnames starting with L or CEX as they are reserved for input file DDnames.

INCLUDE(*list*)|EXCLUDE(*list*)
The list of values to include in or exclude from the report. The format of the list is:

(*value1*,*value2*,...,(*from*,*to*),...)

where *value1*,*value2*,... represent specific values or masks (using * for generic positions), and (*from*,*to*),... represents a range of values.

comments
Text trailing the last operand on the line, separated by at least one space, is treated as a comment. Also, lines with an asterisk * in column 1 are treated as comments.

Columns 72 to 80 are ignored.

Related concepts:

"TRF Report Set" on page 628
IMS PA reports for the OMEGAMON Transaction Reporting Facility (TRF) are specified in a Report Set of type TRF.

"ATF Report Set" on page 660
ATF reports are specified in a Report Set of type ATF.

Related tasks:

"Run Log Report Set" on page 291
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.

"Run Monitor Report Set" on page 495
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

"Run Connect Report Set" on page 571
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

Chapter 3. Processing extract data sets

IMS PA can create various types of extract data set for further processing and analysis by applications.

IMS PA reports can create four types of extract data sets:

Extract data sets

Delimited text files that can be created by the following reports for input to external programs such as DB2 or PC spreadsheet tools such as IBM Lotus Symphony Spreadsheets or Microsoft Excel:

Log extracts

- Transaction Exception (MSGQ)
- Fast Path Transaction Exception
- CPU Usage
- Database Update Activity
- Form-based Transit List and Summary
- ATF Enhanced Summary record

Connect (CEX) extracts

- Connect Transit – for export to DB2
- Form-based Transit List and Summary

TRF extracts

- Form-based Message Queue List and Summary

ATF extracts

- Exception Transaction

For information on how to directly load form-based extracts into DB2 tables or import into a PC spreadsheet and charting application, see Chapter 18, “Processing form-based extracts (CSV files),” on page 259.

IMS Log extract by interval data sets

Proprietary format for input to option 8 **Graphing & Export** of the IMS PA primary option menu can be created by the following reports in Log Report Sets:

- Transit Extract by Interval (MSGQ)
- Fast Path Transit Extract by Interval

For more information on processing Log extract by interval data, see “Extract by Interval graphing and export” on page 391.

Transaction index data sets

The IMS Transaction Index contains an X'CA01' record for each transaction in the IMS log, accumulating all the information in the log about the transaction. The index is used to improve reporting efficiency in IMS Performance Analyzer and to streamline problem diagnosis in IMS Problem Investigator and Transaction Analysis Workbench. For further details, see Chapter 19, “IMS Transaction Index,” on page 271.

The IMS Connect Transaction Index contains an X'CA20' record for each transaction in an IMS Connect Extensions journal, accumulating all the information in the journal about the transaction. The index is not used by IMS Performance Analyzer but in IMS Problem Investigator, by merging the index and journal, you can track against the index and see all the Connect events for that transaction.

ATF Exception Transaction extracts

Created in either of two formats: a VSAM KSDS journal or a sequential data set for later IDCAMS REPRO into a journal data set. The extract journal can be processed subsequently by IMS PA in a similar but more efficient way to the original ATF journals.

Chapter 4. Installation and setup

These topics describe the supplied component libraries, how to get started using the IMS Performance Analyzer dialog, what to consider if upgrading from a previous product release, and the recommended ISPF settings.

IMS Performance Analyzer libraries

The components of the IMS Performance Analyzer dialog are delivered in these libraries.

SIPIEXEC
REXX EXECs

SIPILINK
Link/Load modules

SIPIMENU
ISPF messages

SIPIPENU
ISPF panels

SIPISENU
ISPF skeletons

SIPITENU
ISPF input tables

where ENU is for U.S. English.

In addition, sample JCL for running batch reports and extracts is supplied in the **SIPISAMP** library.

Starting IMS Performance Analyzer with IPIOREXX

To start the IMS PA dialog, you run the IPIOREXX REXX exec supplied in the SIPIEXEC library.

About this task

The IMS Performance Analyzer initialization module IPIOREXX accepts four parameters:

qual The data set high level qualifier for IMS PA data sets. For example, `IMSPA.V4R4M0`. `NODYNAM` specifies that IMS PA is to use the existing allocation settings.

lang Identifies the national language. The default is `ENU` (U.S. English). Currently, IMS PA only supports U.S. English.

PASSAPPL
Optional. Overrides the enforcement of the default IMS PA application `NEWAPPL(IPIO)`. IMS PA uses the invoking application's APPL specification. See “Overriding the default application” on page 49.

low level qualifiers
Optional. Overrides the default low level qualifiers for the six IMS PA data

sets. All six qualifiers must be specified in the correct order, enclosed in brackets and separated by commas. For example: `(EXEC,LINKLIB,MSG,PNL,SKL,TBL)`. See "Overriding the data set low level qualifiers" on page 49.

You can either install the IMS PA libraries statically within your ISPF library setup, or allow them to be set up dynamically when the IMS PA dialog is used. Then you can optionally add IMS PA to an ISPF menu.

The two installation methods are described in the following topics. Dynamic setup is the simplest and quickest approach.

Dynamic setup

The simplest way to start the IMS PA dialog is to allow the startup REXX exec, IPIOREXX, to dynamically allocate the IMS PA libraries. This is known as *dynamic setup*.

To enable the IMS PA libraries to be dynamically set up when the IMS PA dialog is used, do the following:

1. On the TSO command processor panel, enter:
   ```
   EX ' qual.SIPIEXEC(IPIOREXX)' 'qual lang'
   ```
2. To add IMS PA to an ISPF menu, set &ZSEL to:
   ```
   CMD(EX '' qual.SIPIEXEC(IPIOREXX)'' ''qual lang'') NOCHECK
   ```
   `NOCHECK` is specified to support entry of concatenated commands via the direct option (trail). Also specify on the calling panel:
   ```
   &ZTRAIL=.TRAIL
   ```

Note: Dynamic setup requires that the supplied library names are retained.

Static setup

If you prefer not to have the IMS PA libraries dynamically allocated each time you start the dialog, you can instead add the libraries to the appropriate ISPF concatenations in your TSO logon procedure. This is known as *static setup*.

To install the IMS PA libraries statically within your ISPF library setup, do the following:

1. Include the library *qual*.SIPIEXEC in your SYSEXEC or SYSPROC concatenation. This library contains the required EXECs.
2. Add the remaining libraries to your ISPF library setup:
   - Include the link/load module library *qual*.SIPILINK in the ISPLLIB concatenation.
   - Include the message library *qual*.SIPIM*xxx* in the ISPMLIB concatenation.
   - Include the panel library *qual*.SIPIP*xxx* in the ISPPLIB concatenation.
   - Include the skeleton library *qual*.SIPIS*xxx* in the ISPSLIB concatenation.
   - Include the table library *qual*.SIPIT*xxx* in the ISPTLIB concatenation.
3. On the TSO command processor panel, enter:
   ```
   %IPIOREXX 'NODYNAM lang'
   ```
4. To add IMS PA to an ISPF menu, set &ZSEL to:
   ```
   CMD(%IPIOREXX ''NODYNAM lang'') NOCHECK
   ```

Overriding the default application

To override the default IMS PA application, use the PASSAPPL parameter in the ISPF menu &ZSEL setting.

Example

If you enter the following command, IMS PA will use `IMSA` as the application, rather than the default of `IPIO`.

```
CMD(EX '' qual.SIPIEXEC(IPIOREXX)'' ''qual lang PASSAPPL'') NOCHECK NEWAPPL(IMSA)
```

Overriding the data set low level qualifiers

To override the default IMS PA data set low level qualifiers, specify the six data set low level qualifiers as the last parameter in the ISPF menu &ZSEL setting.

Example

```
CMD(EX '' qual.SIPIEXEC(IPIOREXX)'' ''qual lang (EXEC,LNK,MSG,PNL,SKL,TBL)'')
```

where IMS PA will use:
'*qual*.EXEC' as the REXX EXEC library
'*qual*.LNK' as the Link/Load library
'*qual*.MSG' as the ISPF messages library
'*qual*.PNL' as the ISPF panels library
'*qual*.SKL' as the ISPF skeletons library
'*qual*.TBL' as the ISPF input tables library

Other setup options

The IMS PA dialog requires no special customization or setup. Reporting can commence immediately. However, there are some setup considerations for allocating data sets, tape devices for shared queue processing, and GDDM graphing.

You may choose to bypass these setup options if:

- You are satisfied with IMS PA automatically allocating data sets with default characteristics as needed.
- Tape devices for shared queue processing and GDDM graphing are not relevant to the way you intend to work with IMS PA.

Setting up IMS PA data sets (optional)

IMS PA uses various data sets to store information. When it requires them, IMS PA can allocate the data sets using default characteristics. Therefore you can bypass this section entirely. However, if you want to do the set up yourself, read on.

About this task

The IMS PA dialog uses the following data sets:

- Control Data Sets for Report Sets, Expectation Sets, Object Lists, Distributions, and Report Forms
- Averages
- History Files
- Extracts
- Export Files
- Trace Statistics

To specify the default allocation settings for these data sets, use option 0.2 **Reporting Allocation Settings** from the IMS PA primary option menu or from **Options** in the action bar. The IMS PA dialog uses ISPF tables to store some user data, such as the specification of the IMS subsystems, groups, and input log and monitor data sets. Allocate and catalog the data set to be used for this purpose, or use the default data set allocated by IMS PA. It must be a partitioned data set (PDS or PDSE) with fixed-block 80 record format. As it contains user-specific data, it should be setup for exclusive update by that user. See "IMS PA Settings" on page 67 for specification of the Permanent ISPF Table Library.

Procedure

Setting up the data sets involves the following steps:

1. For the Report Sets, Expectation Sets, Object Lists, Distributions, and Report Forms:
   a. Decide on whether they will be contained in the one data set or separate data sets. It is recommended that a separate data set be used for each type, mainly to avoid conflict with member names.
   b. Allocate and catalog the desired number of data sets. They must be partitioned data sets (PDS or PDSE) with fixed-block 80 record format. Standard facilities such as ISPF option 3.2 **Data Set Utility** can be used to do this.
   c. Define the data sets to the dialog. If not previously allocated and cataloged, they may be created dynamically by the dialog using default allocation attributes. See "Specifying IMS PA control data sets" on page 75.
2. Allocate and catalog the Averages Data Sets, and define default allocation details for the output Averages Data Sets. The input and output Averages Data Sets are optional requirements for the Management Exception report. See Chapter 9, "Averages Data Sets," on page 143 for a description of how the dialog is used to maintain these data sets, and "Transaction Averages data sets specification" on page 334 for specification of the data sets to the Management Exception report.
3. Allocate and catalog the Extract Data Sets, and define default allocation details for the output Extract Data Sets.
   - For Extract by Interval processing, an input data set is optional, and an output data set is mandatory. See "Transaction Transit Extract by Interval" on page 310 and "Fast Path Transit Extract by Interval" on page 361.
   - The Transaction (MSGQ/FP) Exception reports optionally produce up to two extract data sets, one for all transaction traffic and one for exceptions. See "Transaction Exception report and extract" on page 313 and "Fast Path Transaction Exception report and extract" on page 364.
   - For the Transaction History File, you need to specify an output data set that will hold the historical records. See "Transaction History File" on page 316.
   - The CPU Usage report optionally produces an extract data set. See "CPU Usage report and extract" on page 338.
   - The Database Update Activity report optionally produces an extract data set. See "Database Update Activity report and extract" on page 346.
   - The Connect Transit Extract requires an output data set. See "Connect Transit Extract" on page 580.
4. Allocate and catalog Export Data Sets if export processing of Extract by Interval data is required. The allocation attributes of the Export Data Sets should be compatible with the Extract Data Sets from where the data is being exported.

5. Allocate and catalog the Monitor Trace Data Sets, and define default allocation details. The Trace Data Set is optional. It is used to capture statistics from the monitor trace for later processing by the IMS print utilities DFSUTR20 and DFSUTR30. See “Monitor Global Options” on page 499 for specification of the Trace Data Set to the dialog.

Setting up for shared queue processing

For IMS shared queue processing, if there is a restriction on tape devices for log file merging, specify the number of tape devices available to the IMS PA batch report processors and the data set allocation attributes for the Merge Work Files.

About this task

For details, see “Shared Queue Settings” on page 73.

Setting up for GDDM graphing

IMS PA requires GDDM-PGF for displaying and printing graphs of Extract by Interval data.

Procedure

To use this optional facility:

Include the library containing the GDDM and PGF executable modules in the system LNKLST, or as follows:

- In the ISPLLIB concatenation for online execution under ISPF.
- In the STEPLIB concatenation of the IMS PA job for batch processing. See “IMS PA Settings” on page 67 for specification of the **GDDM-PGF Load Library**.

Alternatively, IMS PA provides an optional export and download facility for Extract by Interval data to enable graphs to be produced by external programs or PC applications such as IBM Lotus Symphony Spreadsheets or Microsoft Excel. IMS PA has no dependency on these products; they are installed and operated independently. For further information on setting up for Extract by Interval export, see “Export settings” on page 58.
To use PC tools to produce graphs from IMS PA data, use your normal process, specifying as input an IMS PA Extract by Interval export file or other IMS PA extract data set such as Traffic, CPU Usage, Database Update Activity, or Form-based extract.

Upgrading to IMS Performance Analyzer V4R4

All objects created in previous releases of IMS PA are upwardly compatible with IMS PA V4R4 and automatically converted, where required, by the dialog. Reverting to previous releases with objects created or modified using a later release, is *not* supported.

About this task

System, Group and File specifications are automatically converted, when required, to V4R4 when the System Definitions or Groups panel is first accessed through the dialog after migration.

Report Sets are automatically upgraded when the Report Set Edit panel is first accessed via the dialog after migration. This allows you to take advantage of the new reports and options.

Report Sets created prior to IMS PA V4R4 are still supported by the batch report processing, no new features will be active.

The contents of Object Lists are retained unchanged.

Averages and Expectations are retained unchanged.

Distributions are retained unchanged.

Extract by Interval files from earlier releases of IMS PA are supported by V4R4. If an old extract by interval file, created before shared queues were supported, is used from the dialog (for either exporting or graphing), it is treated as a new V4R4 extract file with the new queue times set to zero. The old extract files can coexist with V4R4 extract files. They can be used as input or output to the Transaction (MSGQ or FP) Transit Extract by Interval processes.

Procedure

When upgrading to IMS PA V4R4:

1. Before commencing the installation of the new release of IMS PA, it is recommended that you take a backup of your current IMS PA Load Library, and the following libraries for each user:
   - Permanent ISPF Table Library as specified on the IMS PA Settings panel. This data set holds the definitions of the IMS Subsystems, Sysplex Groups, and associated Log, Monitor, and OMEGAMON TRF and ATF input files IMS Connect systems, groups and files. When installing the new release, users may elect to specify a new data set name for this library, but in this case, no system details and input file specifications would be carried forward.
   - IMS PA Control data sets:
     – Report Sets
     – Report Forms
     – Expectation Sets
     – Object Lists
     – Distributions
2. Install IMS PA V4R4 as described in the *Program Directory*. To complete installation of the IMS PA dialog, follow the installation and setup instructions.
3. Ensure the correct IMS PA Load Library for V4R4 is specified on the IMS PA Settings panel (dialog option 0.1 **IMS PA Settings**).

ISPF dialog features

IMS PA has been designed to follow CUA conventions, while also accommodating established ISPF conventions. The dialog contains these features for enhanced usability.

Prompt (F4)

Some entry fields have a Prompt action that allows you to fill in the field by selecting a value from a pop-up list of valid values.

Prompt fields are indicated by a + (plus sign) to the right of the field or column heading. To display the pop-up list, move the cursor to the field and press the **Prompt** (**F4**) key. A list of available values is displayed from which you can select one or more depending on the circumstance.

Prompt fields are "automatically completed" if you enter enough characters to make the value unique. For example, a field with allowed values YES, NO, NEVER, is automatically completed if you enter Y, NO, NE.

Action bar

An action bar is available at the top of panels to assist with navigation and function. To select an option in the action bar, position the cursor on it and press Enter. A pull-down menu of choices is displayed. To choose one, either position the cursor on it or type the number of your choice, then press Enter.

The standard action bar options in IMS PA are:

File Allows new, save, saveas, cancel, or exit. Not all choices are available on all panels.

Options
Change your IMS PA Profile Options without having to return to the Primary Menu.

Edit/View
Manipulate the way items are displayed on the panel. Allows reset, refresh, sort, locate. Not all choices are available on all panels.

Sysdefs
Change your system and group definitions without having to return to the Primary Menu.

Samples
Populate the Report Forms data set with sample forms.

Help Displays product help information, described in "Online help" on page 54.

Function keys

IMS PA uses function keys extensively and displays the settings at the bottom of each panel.

To display function key labels, enter the ISPF command `PFSHOW ON`. To hide labels, enter `PFSHOW OFF`.

It is recommended that you set `PFSHOW ON` until you are familiar with using IMS PA.

Function keys in dialog panels

The default function key assignments for IMS PA dialog panels are:

Help (F1)
Help for field or panel depending on cursor position.

Split (F2)
Split the screen at the cursor position.

Exit (F3)
Leave the panel and save changes if applicable.

Prompt (F4)
List all available choices for the entry field.

Rfind (F5)
Repeat FIND to locate next occurrence of search string.

Resize (F6)
Remove or restore window border.

Backward (F7)
Scroll backwards.

Forward (F8)
Scroll forwards.

Swap (F9)
Switch active screen in split screen mode.

Left (F10)
Scroll left for more information when `More: < >` is displayed.

Actions (F10)
Switch cursor between action bar and body of panel.

Right (F11)
Scroll right for more information when `More: < >` is displayed.

Cancel (F12)
Leave the panel and do not save changes.

Return (F16)
Return to the underlying panel.

Cretriev (F24)
Retrieve the last command.

Function keys in help panels

The default function key assignments for IMS PA help panels are:

Help for help (F1)
How to navigate help.

Exit (F3)
Leave help and return to the dialog panel.

Resize (F4)
Remove or restore window border.

Keys help (F6)
List the function key assignments.

PrvPage (F7)
Scroll backwards to previous page when `More: -` is displayed.

NxtPage (F8)
Scroll forwards to next page when `More: +` is displayed.

Cancel (F12)
Remove the help panel and return to the underlying (help) panel.

Online help

IMS PA help is context-sensitive, that is, the information displayed is appropriate to the position of the cursor when you request help.

F1 function key

Function key F1 is the default key to request Help.

Extended Help is available from the command line of every panel. Position the cursor in the command line and press F1 or enter the HELP command. The line actions and primary commands that apply to the current panel are always listed in the Extended Help.

Field Help is available on every input field and some output fields. Position the cursor in the field and press F1.

Message Help is available. When a short message is displayed at the top right, press F1 to see the long message in a pop-up window. This occurs if, in ISPF Settings, you have selected **Long message in pop-up**.

Reference phrases are used to indicate that more information is available on a topic. You can use the ISPF command SETTINGS to change the attributes of reference phrases to ensure that they are easily distinguished from the surrounding text. When a help window is displayed, press the Tab key to position the cursor on a reference phrase (typically white) then press F1. A pop-up window displays additional information on the topic.

Action bar help

Help in the action bar provides the following types of information to help you use IMS PA:

Extended Help
: The help information for the currently displayed panel. This describes what you can do from the panel and the fields that appear on the panel.

Commands Help
: The commands available on this panel.

Keys Help
: The function keys available on this panel. The list shows the default function key assignments, but you can reassign them using the ISPF KEYS and KEYLIST commands.

Tutorial
: Invoke the online tutorial.

Online tutorial

The online tutorial is available from anywhere in the dialog. To invoke the tutorial, select **Help** > **Tutorial** from any action bar.

The tutorial is also available from the Primary Option Menu when you press F1 or enter HELP in the command line, or select **Help** > **Extended Help** from the action bar.

Recommended ISPF setup

The IMS PA dialog is an ISPF application following CUA conventions. You might wish to set up your ISPF environment so that you can use the IMS PA dialog efficiently.

Panel size and scrolling

IMS PA panels are optimized for 32 lines, but accommodate 24 lines using scrolling with the **Backward** (**F7**) and **Forward** (**F8**) function keys. Help windows have a maximum size of 24 lines.

CUA attribute settings

The dialog is designed to use the default CUA attributes. It is recommended that the following panel element default settings are honored. Use the CUAATTR command to check these:

1. Data entry fields (Choice Entry, List Entry, and Normal Entry) have the USCORE (underscore) Highlight attribute set. This will allow you to easily identify the input fields on each panel.
2. Data entry fields, List Items, and Normal and Descriptive Text fields have their attributes set differently. This will allow you to easily distinguish between input and output data fields and instructions.
3. Normal Text, Emphasized Text and Reference Phrase have their color and intensity attributes set differently. To easily distinguish Reference Phrases is particularly relevant for the online Help and Tutorial. See “Online help” on page 54.

Point-and-Shoot fields

Point-and-shoot fields perform an action when you select them. For example, when you select a column heading in a list of system definitions, IMS PA sorts the list by that column.

Tabbing to point-and-shoot fields

To make it easier to select point-and-shoot fields, you can include them in the tabbing order when you press the Tab key to skip between fields:

1. Enter the ISPF SETTINGS command to display the ISPF Settings panel.
2. Select **Tab to point-and-shoot fields** as shown in Figure 6 on page 57.

Highlighting point-and-shoot fields

The dialog is designed to use the default CUA attributes. However, we recommend that you set the color of point-and-shoot fields to distinguish them from other fields:

1. Enter the ISPF CUAATTR command.
2. Scroll to the **Point-and-Shoot** panel element, and then enter a color name (for example, YELLOW).

   To make these fields even more distinct, you could also set their highlight attribute to REVERSE (reverse video).

```
                    CUA Attribute Change Utility
Command ===> _____________________________________________ Defaults

Panel Element                  Color        Intensity  Highlight
                                                          More:   - +
List Items . . . . . . . . . . WHITE        LOW        NONE
Normal Entry Field . . . . . . TURQ         LOW        USCORE
Normal Text  . . . . . . . . . GREEN        LOW        NONE
Panel ID . . . . . . . . . . . BLUE         LOW        NONE
Panel Instruction  . . . . . . GREEN        LOW        NONE
Panel Title  . . . . . . . . . BLUE         LOW        NONE
Point-and-Shoot  . . . . . . . YELLOW       HIGH       NONE
PD Available Choices . . . . . WHITE        LOW        NONE
PD Unavailable Choices . . . . BLUE         LOW        NONE
```

Figure 6. Recommended CUAATTR settings: differentiate point-and-shoot fields

Using your mouse as a lightpen

The IMS PA Report Set panel is a tree structure of report categories and reports. The report categories act as folders that can expand (to show) and collapse (to hide) the reports contained within them. If your terminal emulation permits, configure your **Mouse Options** to activate the lightpen function. You can then use the left-button of your mouse to click on the + to expand and - to collapse the report categories. This is an alternative to entering line action **S**. Use of your mouse as a lightpen may vary depending on your terminal emulation software.

Displaying long messages

IMS PA uses both long and short messages. ISPF displays short messages display at the top right of a panel, next to the panel title. ISPF usually displays long messages in a pop-up window. However, if a long message is less than the screen width, then, by default, ISPF displays it just below or above the command line.

1. Enter the ISPF SETTINGS command to display the ISPF Settings panel.
2. Ensure **Long message in pop-up** is selected.

```
                              ISPF Settings
Command ===> ____________________________________________________________

Options                                    Print Graphics
  Enter "/" to select option                 Family printer type 2
  _  Command line at bottom                  Device name . . . .
  /  Panel display CUA mode                  Aspect ratio  . . . 0
  /  Long message in pop-up
  _  Tab to action bar choices
  /  Tab to point-and-shoot fields         General
  /   Restore TEST/TRACE options              Input field pad . . N
  _  Session Manager mode                    Command delimiter . ;
  /  Jump from leader dots
  _  Edit PRINTDS Command
  /  Always show split line
  _  Enable EURO sign
```

Figure 7. Recommended ISPF settings: Tab to point-and-shoot fields

To move messages displayed in a window to another location:

1. Position the cursor on the top or bottom border of the message window, and press Enter.

2. Position the cursor at the location on the panel to which you wish to move the message, then press Enter.

Export settings

IMS PA provides a facility for exporting extracts to your PC or workstation. You can then import the extracts into various workstation tools to create graphs.

To successfully transfer extracts to your workstation, the ISPF workstation connection must be active. To activate the workstation connection, you must have the `wsa.exe` file installed. If you don't, download it from the mainframe:

1. Type the ISPF command SETTINGSon the command line.
2. Select the **Workstation** menu item from the action bar.
3. Select option 4 **Download ISPF C/S component**.
4. Specify **Manual** for Download method and `'ISP.SISPGUI'` for the Data set to copy file from.

```
              Client/Server Component Download
Command ===> ____________________________________________

Download methods
3  1. FTP (requires workstation FTP server)
   2. ISPF C/S (requires workstation connection)
   3. Manual

Workstation Type
1  1. Windows 95/98/2000/NT    3. AIX             5. HP UX
   2. OS/2                     4. Solaris

Directory to copy file to:
____________________________________________________________

Data Set to copy file from:
'ISP.SISPGUI'_______________________________________________

Enter "/" to select option
_  Create directory to which the file is to be copied.
```

Figure 8. ISPF Client/Server Component Download

5. Press Enter and note the name of the member to be copied (ISPGUINX), the data set where the file resides (ISP.SISPGUI), and the name of the file to be created on the workstation (`ispfinst.exe`). This workstation file is the Workstation Agent Install Program you will need to run.

```
              Client/Server Component Download
Command ===> ____________________________________________

In order to install the ISPF Client/Server Component
workstation code you will need to download (Binary) from the
MVS data set where the ISPF Client/Server Component install
executable resides to a directory on your workstation.
Complete the install by running the install program on your
workstation. The program is a self extracting executable and
will result in files being generated on your workstation.

Copy member . : ISPGUINX

From data set : 'ISP.SISPGUI'

To file . . . : ispfinst.exe
```

Figure 9. ISPF Client/Server Component Download: manual download

6. Transfer the member from the host to your workstation using your preferred method of file transfer. For example, using the in-built file transfer function in your terminal emulator.
7. On your workstation, run the `ispfinst.exe` (Workstation Agent Install Program).
8. When installation has finished, notice that the `wsa.exe` file has been added to your workstation. If you want to export data from your mainframe to your workstation using the IMS PA facility, you will need to run this program.

GDDM graphing

IMS PA provides optional graphing capability using GDDM-PGF. To display or print graphs of extract by interval transit data, this facility must be available to the dialog.

Part 2. Using the dialog

This part describes how to use the IMS PA dialog to request reports and extracts and submit them for batch processing.

Chapter 5. Getting started

The IMS PA dialog provides a menu-driven facility to generate reports, graphs and extracts from IMS Log, Monitor, IMS Connect, and OMEGAMON TRF and ATF data to aid in analyzing and tuning the performance of your IMS Database and Transaction Monitor systems. IMS PA validates your requests and automatically creates the JCL to produce the reports and extracts in batch.

For instructions on how to install the IMS PA dialog, see "Starting IMS Performance Analyzer with IPIOREXX" on page 47. Dynamic setup is the simplest and quickest approach.

To invoke IMS PA from the ISPF option 6 command line, enter:

```
EX 'IPI.V4R4M0.SIPIEXEC(IPIOREXX)' 'IPI.V4R4M0 ENU'
```

If the qualifier for your IMS PA installation data sets is not `IPI.V4R4M0`, then alter the command accordingly.

The IMS PA dialog requires no special customization or setup. Reporting can commence immediately.

If you are new to IMS PA, you will find the following helpful:

1. "Recommended ISPF setup" on page 55 gives the ISPF settings that help you use the IMS PA dialog more efficiently.
2. "How to use the dialog" on page 64 outlines the steps required to produce reports and extracts.
3. Take the Chapter 6, "Guided tour," on page 79. This walks you through the main functions to help you become familiar with using the IMS PA dialog.

IMS PA primary option menu

The primary option menu is the panel that is displayed when you start the IMS PA dialog.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
              IMS Performance Analyzer 4.4 - Primary Option Menu
Option ===> ___________________________________________________________________

0  IMS PA Profile     Customize your IMS PA dialog profile
1  System Definitions Specify IMS and Connect systems and OMEGAMON files
2  Groups             Specify Groups of IMS and Connect systems (Sysplexes)
3  Report Sets        Request and submit reports and extracts
4  Expectation Sets   Define Expectation Sets (Log exception reporting)
5  Averages           Edit Averages data sets (Log exception reporting)
6  Object Lists       Define Object Lists
7  Distributions      Define Distributions
8  Graphing & Export  Graph or export Log Extract by Interval data
9  IMS Connect        Submit IMS Connect report requests
10 Report Forms       Define Report Forms
X  Exit               Terminate IMS PA
```

Figure 10. IMS PA primary option menu

The IMS PA dialog allows you to:

- Specify reports and extracts and tailor them to suit your requirements.
- Specify your IMS subsystems and log and monitor data sets that you want to use for reporting.
- Specify Groups of IMS subsystems for shared queue reporting.
- Specify runtime options to control the report period and input data used.
- Edit the JCL and commands generated by IMS PA to run your reports and extracts.
- Submit your report and extract requests.
- Access the Averages data produced by log exception reporting.
- Specify Expectations to qualify log exception reporting.
- Specify Distributions to define the attributes of distribution graphs.
- Extract transaction transit by time interval data for graphing or export.
- View your list of IMS Connect systems and archive data sets and submit report requests.
- Create Report Forms for tailored IMS Log and IMS Connect reporting.

How to use the dialog

These steps describe briefly how to use the dialog to start reporting.

Navigating

Navigating the ISPF dialog involves a combination of actions. At any point, you can find out what actions are available to you.

To navigate the ISPF dialog, you perform a combination of these actions:

- Select menu options
- Enter line actions (one- to three-letter commands) next to items in lists
- Enter primary commands on the command line
- Press function keys
- Select an option from the action bar menu

To find out what actions are available to you at any point:

- To display a popup menu of available line actions, enter **/** (a forward slash) next to a list item.
- To get help on the available commands, open the **Help** menu, and then select **Command Help**.
- To get help on the available function keys, open the **Help** menu, and then select **Keys Help**.

Shortcut navigation to the primary IMS PA functions is available. For example, to invoke Report Sets where you define your report and extract requests, you can select option 3 from the IMS PA primary option menu, or enter =3 from any IMS PA command line.

Initial setup (defaults apply)

This is applicable when using IMS PA for the first time. Initial setup is optional. IMS PA uses default settings and prompts you to allocate data sets (with default allocation attributes) as they are required.

Procedure

1. Check your ISPF environment settings. See "Recommended ISPF setup" on page 55.
2. Specify the IMS PA settings. This allows some customization of the dialog and JCL used for generating reports. See "IMS PA Settings" on page 67.
3. Allocate the data sets that will contain the Report Sets, Expectation Sets, Object Lists, and Distributions, and specify them to the dialog. See "Specifying IMS PA control data sets" on page 75.
4. Specify data set allocation defaults for Averages, Transit Extract by Interval, Transaction (MSGQ/FP) Transit Traffic Extracts, Summary Extracts, and Trace output data sets.
   - The Averages data set is used by the Management Exception (log) report.
   - The Transit Extract by Interval data set is used to extract transaction (MSGQ or FP) transit log data by time interval for graphing or export.
   - The Transaction Extract data sets are used to extract all transaction (MSGQ or FP) log records or exception records only.
   - The Summary Extract data sets are created by the CPU Usage and Database Update Activity reports.
   - The Trace data set is used to output monitor statistics records.

   See "Reporting Allocation Settings" on page 71.
5. For shared queue processing, if there is a restriction on tape devices for log file merging, specify the number of tape devices available to the IMS PA batch report processors and the data set allocation attributes for the merge work files. See "Shared Queue Settings" on page 73.
6. For reporting on IMS Connect event data, specify the IMS Connect Extensions Definitions Data Set in Profile Options. See "Specifying the IMS Connect Extensions definitions data set" on page 76.

Everyday operation

After initial setup, this is the normal procedure to request and generate reports.

1. Define a Report Set:
   - Create a new Report Set. See "Creating new Report Sets" on page 126.
   - Specify any options applicable to the reports you wish to include in the Report Set. The Global Options apply to all reports within the Report Set.

- Select and tailor the reports that you require. Modified reports will automatically be activated within the Report Set. For details of all report options, see:
  - Chapter 20, “Requesting Log reports,” on page 287
  - Chapter 22, “Requesting Monitor reports,” on page 491
  - Chapter 24, “Requesting IMS Connect reports,” on page 567
  - Chapter 26, “Requesting OMEGAMON TRF reports,” on page 627
  - Chapter 28, “Requesting OMEGAMON ATF reports,” on page 659
- If requesting the Management Exception (log) report, then you will need to consider defining Expectation Sets and Averages Data Sets. You may also use Expectation Sets for the Transaction (MSGQ or FP) Exception reports and extracts.
- If requesting an Extract by Interval of transaction transit data for subsequent graphing or export, you will need to consider defining the extract and export data sets. See “Transaction Transit Extract by Interval” on page 310.
- If requesting the Transaction (MSGQ or FP) Exception, CPU Usage or Database Activity reports, then you will need to consider defining extract data sets, although IMS PA can allocate them for you at the time they are required.

2. Define any Object Lists needed to support record selection or report grouping.
3. Define new Distributions if you wish to customize the distribution graphs produced by some reports. Sample Distributions are provided for all distribution graphs.
4. Specify the name of the IMS subsystems and log and monitor files containing the data for reporting. For log data, you can specify the RECON or MDA data sets for DBRC Log Selection, instead of defining log files explicitly. For shared queue sysplex reporting, you can define groups of IMS subsystems. See Chapter 12, “Systems and Files,” on page 167 and “DBRC Settings for an IMS Subsystem” on page 172.
5. Run the Report Set to generate the reports and extracts. Use the RUN command to prompt you for runtime options including system selection, report interval and the execution mode. Alternatively, you can use the SUBMIT (SUB), JCL and JCLCMD (JCM) commands to set the execution mode and optionally bypass the runtime prompt. SUB and JCL execute the Report Set whereas JCM executes a command deck. SUB submits the job directly whereas JCL and JCM allow you to edit the JCL before you submit it. Optionally, the JCL can be stored in an external library to edit and submit independently of the IMS PA dialog. See “Running Report Sets” on page 127.
6. An alternative way to run IMS Connect reports is to view the IMS Connect systems and archive data sets, then use the RUN command to select one for reporting.
7. View or print the report output using your usual method, such as SDSF or ISPF option 3.8 Outlist Utility.
8. Use the IMS PA dialog to view or print GDDM graphs of the Extract by Interval data, export the data for use by external programs such as DB2, or transfer the exported data to a PC workstation.
9. Process the extract data from the Transaction (MSGQ/FP) Traffic, CPU Usage and Database Update Activity reports using external programs or PC tools in your usual way.

IMS PA Profile Options

This facility allows you to customize your IMS PA user profile. Defaults are set initially so you can start using IMS PA, but you can change these at any time to suit the particular way you want to interact with the IMS PA dialog. Typically you would set the profile options just once.

To display the IMS PA Profile Options Menu, select option 0 **IMS PA Profile** from the IMS PA primary option menu, or from any IMS PA panel, select **Options** from the action bar.

```
             IMS PA Profile Options Menu
Option ===> ____________________________________________

1  IMS PA Settings
2  Reporting Allocation Settings
3  Shared Queue Settings
4  IMS PA Control Data Sets
5  IMS Connect Extensions Definitions Data Set
X  Exit
```

Figure 11. IMS PA Profile Options Menu

The Profile Options menu choices are:

1. **IMS PA Settings**. Customize aspects of the IMS PA dialog and the job card it uses when generating Report Set JCL.
2. **Reporting Allocation Settings**. Specify the allocation attributes of data sets that may need to be created during Report Set processing. The IMS PA dialog uses these when generating the Report Set JCL.
3. **Shared Queue Settings**. Specify options that affect the generation of JCL to merge log files for processing IMS shared queue log data from multiple IMS subsystems.
4. **IMS PA Control Data Sets**. Tell the IMS PA dialog which data sets to use for:
   - Report Sets
   - Report Forms
   - Expectation Sets
   - Object Lists
   - Distributions
5. **IMS Connect Extensions Definitions Data Set**. Tell the IMS PA dialog the name of the data set that contains the IMS Connect Extensions System Definitions.

IMS PA Settings

This facility allows you to specify settings to customize the IMS PA dialog and batch JCL for running Report Sets.

To display the IMS PA Settings panel, select dialog option 0.1 **IMS PA Settings**.

Specify settings to customize the IMS PA dialog and batch JCL for running reports and extracts.

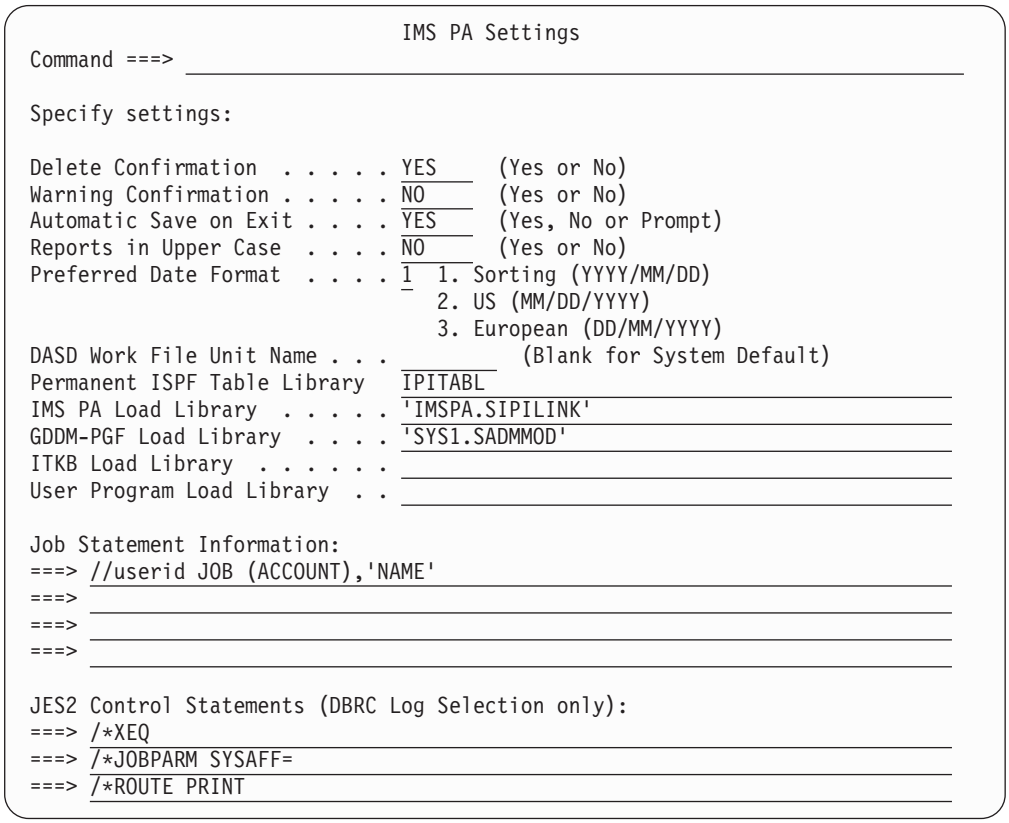


Figure 12. IMS PA Settings

All options have initial settings so you can start using IMS PA immediately. You can change the settings at any time to suit the way you use IMS PA.

DASD Work File Unit Name can be left blank to take the system default. The Load Libraries for IMS PA, GDDM-PGF and User Programs need not be specified if they are included in the system LNKLST concatenation. Values are expected for all other options.

The options are:

Delete Confirmation
Initial Setting: YES

This option applies *only* to requests to delete IMS PA "primary objects" (Report Sets, Report Forms, Expectation Sets, Object Lists, and Distributions).

Specify `YES` to request IMS PA to prompt you for confirmation of a Delete request.

Specify `NO` to have IMS PA action Delete requests immediately without prompting for confirmation.

Warning Confirmation
Initial Setting: NO

The IMS PA dialog may issue a warning if you specify a field value which is acceptable at the time of input but may later cause an error or unexpected result if further action is not taken to resolve the cause of the warning. For example, Data Set not cataloged.

Specify YES to display a confirmation window if you attempt to Save or Exit when a warning is outstanding. This is to ensure that you are aware that a field has been set to a value that has caused a warning.

Specify NO for no confirmation of warnings.

Automatic Save on Exit
Initial Setting: YES

This option applies *only* to IMS PA "primary objects" (Report Sets, Report Forms, Expectation Sets, Averages, Object Lists, and Distributions) when changes during an edit session have been made. It applies only on panels at the top level of the function hierarchy, that is, panels where the SAVE command is available.

Specify YES to automatically save changes on Exit.

Specify NO to automatically cancel changes on Exit.

Specify PROMPT to display a confirmation pop-up on Exit that allows you to choose whether to save changes or discard changes on that occasion.

Reports in Upper Case
Initial Setting: NO

Specify NO to receive reports in upper and lower case characters.

Specify YES to translate all reports to upper case characters only. This is particularly for printers which cannot handle mixed case.

Preferred Date Format
Initial Setting: 1 (YYYY/MM/DD)

The IMS PA dialog can accept and present dates in the following formats:
1. YYYY/MM/DD
2. MM/DD/YYYY
3. DD/MM/YYYY

Enter either 1, 2 or 3 for the date format you prefer.

Note: This option does *not* apply to the format of dates presented on batch reports. Further, there are exceptions within the dialog where the functionality dictates the date format. For example, the Changed time stamp field of component lists (Report Sets, Report Forms, Expectation Sets, Object Lists, Distributions) always presents as YYYY/MM/DD HH:MM to allow the lists to be sorted on this field.

DASD Work File Unit Name
Initial Setting: Blank (for System Default)

Specify the device type or group name to be used by the IMS PA batch interface to allocate temporary data sets as required by facilities such as DBRC Log Selection.

The name must represent a device that is defined as DASD in the Eligible Device Table of the current processor. For example, SYSDA, SYSALLDA, 3390.

If not specified, the system default is used.

Permanent ISPF Table Library
Initial Setting: IPITABL, which translates to '*xxxx*.IPITABL', where *xxxx* is determined by your TSO prefix and userid.

The IMS PA dialog uses the Permanent ISPF Table Library to save your System Definitions and Groups. Specify the name of the data set to be used for this purpose.

If the specified data set does not exist, IMS PA allocates it for you when it is required.

IMS PA Load Library

Initial Setting: '*xxxx*.SIPILINK', where *xxxx* is the qualifier for your IMS PA installation data sets. For example: 'IPI.V4R4M0.SIPILINK' or if not specified for dynamic setup, the default is 'IMSPA.SIPILINK'.

Specify the name of the library that contains the IMS PA link/load modules. This is used by the IMS PA dialog when generating the JCL for executing Report Sets. It need not be specified if the modules reside in the system LNKLST.

GDDM-PGF Load Library

Initial Setting: None.

Specify the name of the library that contains the load modules for GDDM and GDDM-PGF. This is substituted into the JCL built by the dialog to process graphing requests in batch. It is only required for producing graphs in batch mode, and only if the library is not included in the system LNKLST concatenation.

ITKB Load Library

Initial Setting: None.

Specify the name of the library that contains the IMS Tools Knowledge Base (ITKB) executable load modules. The specified library data set name is substituted into Report Set JCL generated by the IMS PA dialog. The ITKB modules are not referenced unless the IMS PA report output is to be written to the IMS Tools Knowledge Base repository.

User Program Load Library

Initial Setting: None.

Specify the name of the library that contains the load modules of the user-written record processors that you wish to run under IMS PA. This is substituted into the JCL built by the IMS PA dialog for executing Report Sets. It is only required if **User-Written Reports** is activated in the Log Report Set being submitted, and only if the library is not included in the system LNKLST concatenation.

Job Statement Information

Specify the JOB card to be used by the IMS PA dialog when building the JCL for executing Report Sets. Multiple cards can be provided and are taken as is. Embedded and trailing null cards are ignored.

Initial Setting: `//userid JOB (ACCOUNT),'NAME'` from the ISPF Log and List JCL job statement information. To review this, use the SETTINGS command to display the ISPF Settings panel, then select **Log/List** > **JCL** from the action bar.

JES2 Control Statements

Specify one or more JES2 Control Statements for your DBRC Log Selection requests.IMS PA accepts any control statement, but performs special processing for `/*XEQ`, `/*JOBPARM`, and `/*ROUTE`.

Initial Setting:

```
/*XEQ
/*JOBPARM SYSAFF=cccc
/*ROUTE PRINT node
```

The statement will always be inserted into the JCL. If the System or Group has Node and/or SYSAFF specified, then it will be substituted, overriding your default.

Reporting Allocation Settings

To display the Reporting Allocation Settings panel, select dialog option 0.2 **Reporting Allocation Settings**.

```
                        Reporting Allocation Settings
Command ===>

Specify data set allocation settings:

Management Exception Averages:
===> //             UNIT=SYSDA,SPACE=(TRK,(5,5),RLSE),
===> //             DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)
===>

Transit Extract by Interval:
===> //             UNIT=SYSDA,SPACE=(TRK,(5,5),RLSE),
===> //             DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)
===>

Transaction (MSGQ/FP/Connect) Transit Total Traffic:
===> //             UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
===>
===>

Transaction (MSGQ/FP) Transit Exception Traffic:
===> //             UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
===>
===>

Summary (CPU Usage, Database Update Activity and Connect) Extracts
===> //             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
===>
===>

Monitor Trace:
===> //             UNIT=SYSDA,SPACE=(TRK,(15,15),RLSE),
===> //             DCB=(DSORG=PS,RECFM=VB,LRECL=2044,BLKSIZE=2048)
===>
```

Figure 13. Reporting Allocation Settings

This facility is used to specify the allocation details for the output data sets that may need to be created during batch processing of Report Sets. IMS PA provides default settings for the data sets which you see when you first invoke this panel or when you clear a setting. Figure 13 shows the default allocation settings.

When the IMS PA dialog builds the Report Set JCL for a new output data set, the corresponding allocation details are appended to a statement of the form:

```
//DDname  DD  DSN=Dsname,DISP=(NEW,CATLG),
```

The data set characteristics, *DDname*, and *Dsname* are as follows:

Management Exception Averages
Sequential data set, VB record format, LRECL of 4092 with an appropriate BLKSIZE of 4096 or higher. Optionally created by the Management Exception report. *DDname* is IPIAVGO. *Dsname* is the **Output Data Set** name on the Transaction Averages Data Sets subpanel.

Transit Extract by Interval
Sequential data set, VB record format, LRECL of 4092 with an appropriate BLKSIZE of 4096 or higher. Used to extract Transaction (MSGQ) or Fast Path (EMH) Transit details by time interval from the log files for subsequent graphing or export. *DDname* is IPIXTRTO (MSGQ) or IPIFPXTO (FP). *Dsname* is the **Output Extract Data Set** name on the Transaction Transit or Fast Path Transit Extract by Interval panels.

Also used for the Transaction History File which contains summarized history data for loading into DB2. *DDname* is IPITHIST. *Dsname* is the **Transaction History DSN** on the Transaction History Filepanel.

Transaction Transit Total Traffic
Sequential data set, FB record format. IMS PA will set the DCB attributes at Extract run time.

MSGQ
LRECL of 263 or less. Optionally created by the Transaction Exception report to contain detail records for all MSGQ transactions. *DDname* is IPITXUT1. *Dsname* is the **Total Traffic Extract Data Set** name on the Transaction Exception panel.

FP LRECL of 143. Optionally created by the Fast Path Transaction Exception report to contain detail records for all FP transactions. *DDname* is IPIFXUT1. *Dsname* is the **Total Traffic Extract Data Set** name on the Fast Path Transaction Exception panel.

Connect
LRECL of 177. Created when the List Transit Extract is requested to contain detail records of all IMS Connect transactions. *DDname* is IPICTRLS. *Dsname* is the **List Extract DSN** on the IMS Connect Transaction Transit Extract panel.

Transaction (MSGQ/FP) Transit Exception Traffic
Sequential data set, FB record format, LRECL of 263 or less (MSGQ), or 252 (FP); IMS PA will set the DCB attributes at Extract run time. See "Traffic data set allocation settings" on page 73. Optionally created by the Transaction Exception or Fast Path Transaction Exception reports to contain a record for each MSGQ or FP exception transaction. *DDname* is IPITXUT2 (MSGQ) or IPIFXUT2 (FP). *Dsname* is the **Exception Traffic Extract Data Set** name on the Transaction Exception or Fast Path Transaction Exception panels.

Summary Extracts
Sequential data set, FB record format. IMS PA will set the DCB attributes at Extract run time. Appropriate for summary extracts such as those optionally created by:

CPU Usage report
See Figure 181 on page 338. LRECL of 132. *DDname* is CPURXTRO. *Dsname* is the **Extract Data Set** name on the CPU Usage panel.

Database Update Activity report
See Figure 185 on page 346. LRECL of 132. *DDname* is DBUAXTRO. *Dsname* is the **Extract Data Set** name on the Database Update Activity panel.

Connect Transit Extract
LRECL of 228. Created when a Summary Transit Extract is requested to contain details of all IMS Connect transactions summarized by time interval. *DDname* is IPICTRSU. *Dsname* is the **Summary Extract DSN** on the IMS Connect Transaction Transit Extract panel.

Monitor Trace
Sequential data set, VB record format, recommended LRECL of 2044 with an appropriate BLKSIZE of 2048 or higher. Optionally used during Monitor Report Set processing to output records from the monitor trace for subsequent processing by the IMS Monitor or DB Monitor Report Print programs DFSUTR20 and DFSUTR30. *DDname* is IPISTOUT. *Dsname* is the **Trace Data Set** name on the Monitor Global Options panel.

Traffic data set allocation settings

The Transaction (MSGQ) Transit Total and Exception Traffic Extract Data Sets have the same DCB requirements, being sequential data sets, with FB record format, and a maximum LRECL of 263. IMS PA will honor an LRECL less than 263 by truncating the extract records. For example, you may set the record length to 164 if shared queue elapsed times and the queue time stamps are not required. Refer to the assembler macro IPITRDR in the SIPIMAC library for the layout of these extract records.

The Fast Path Transit Total and Exception Traffic Extract Data Sets are sequential data sets, with FB record format, and LRECL of 143 and 252 respectively. The record layout is defined by the assembler macro IPIFPDR in the SIPIMAC library and is consistent with DBFULTA0:

- The Total Traffic record is the first 143 bytes of the FPTDR.
- The Exception Traffic record is the entire 252 bytes of the FPTDR.

On the Reporting Allocation Settings panel, you may omit specifying DCB attributes for the extract data sets as IMS PA sets the appropriate DCB at Extract run time. However, if you specify the DCB, IMS PA sets an appropriate BLKSIZE as follows:

- If you omit the BLKSIZE or specify a BLKSIZE less than the LRECL, then IMS PA sets the BLKSIZE to LRECL*10
- If you specify a BLKSIZE that is a multiple of the LRECL, the BLKSIZE is unchanged
- If you specify a BLKSIZE that is not a multiple of the LRECL, then the BLKSIZE is rounded down. For example, if you specify LRECL=263 and BLKSIZE=27998, then IMS PA sets BLKSIZE=27878

Shared Queue Settings

To display the Shared Queue Settings panel, select dialog option 0.3 **Shared Queue Settings**.

The following figure shows the initial settings when you invoke the panel for the first time.

```
                              Shared Queue Settings
Command ===> ____________________________________________________________

Specify settings for merging log files.

Maximum Tape Units Available for Shared Queue Merge  __  (1 to 35)

Shared Queue Merge Work File Allocation Details:
===> //             UNIT=SYSDA,SPACE=(CYL,(100,20),RLSE)_____________________
===> ____________________________________________________________________
===> ____________________________________________________________________
```

Figure 14. Shared Queue Settings

This panel supports fields that affect the way the IMS PA dialog generates JCL to run log Report Sets against IMS shared queue log input.

If a group of IMS subsystems is specified, the Report Set JCL generation process assumes that the subsystems run in a sysplex using shared queues. The IMS PA batch processing then merges the log input from the specified IMS subsystems. See "Shared Queue merge processing" on page 415 for a description of three styles of merge processing for the three different types of IMS PA reports.

When such IMS subsystems log to direct access devices, or when there are sufficient tape units available to concurrently allocate a unit for each IMS subsystem which has logged to tape, IMS PA batch processing merges directly from the input logs. Otherwise, it first copies some log input information to Shared Queue Merge Work Files which are then included in the merge processing.

The dialog builds JCL that minimizes the use of Shared Queue Merge Work Files. This JCL build process is dynamic, based on the Log Input specification and the maximum number of tape units that can be allocated to an IMS PA job for log input. See "Pre-Merge Copy Processing" on page 417 for further details of this process.

The fields are:

Maximum Tape Units Available for Shared Queue Merge
Initial Setting: Blank; unlimited.

Specify the maximum number of tape units available to log Report Set batch processing when shared queue merge processing is required. This value is applied at the time the Report Set JCL is built to determine if the number of log input data sets on tape exceeds the number of tape units available. If no maximum is specified, then the JCL generation process assumes there are sufficient tape units and no Shared Queue Merge Work Files are used.

Shared Queue Merge Work Files Allocation Details
Initial Setting: `// UNIT=SYSDA,SPACE=(CYL,(100,20),RLSE)`

Specify the data set allocation details for the Shared Queue Merge Work File temporary data sets. They must be single volume sequential DASD data sets.

The specified details are substituted directly into the Report Set JCL at the time it is built, appended to a DD statement of the form:

```
//DDname  DD  DISP=(NEW,DELETE,DELETE),
```

where *DDname* is generated by the dialog.

Multiple DD statements for Shared Queue Merge Work Files may be required. These will be generated with the same allocation details, but each with a unique DDname.

Specifying IMS PA control data sets

To work with any of the IMS PA components (Report Sets, Report Forms, Expectation Sets, Object Lists, Distributions), you must first specify the names of the data sets containing them.

About this task

These data sets must be cataloged, partitioned data sets (PDS or PDSE) with RECFM=FB and LRECL=80. Standard facilities, such as ISPF option 3.2 **Data Set Utility**, can be used to create and catalog the data sets. Alternatively, you can let IMS PA allocate the data sets for you using the default attributes of LRECL=80, BLKSIZE=6160, SPACE=(CYL,(1,1,50)).

You can use the same data set for all components. However, it is recommended that each type of component is stored in a separate data set to avoid conflict with member names.

Procedure

To specify the data set names:

1. Select dialog option 0.4 **IMS PA Control Data Sets**.
   The IMS PA Control Data Sets panel is displayed.

```
                        IMS PA Control Data Sets
Command ===> ____________________________________________________________

Specify the names of the IMS PA Control Data Sets.

Report Sets  . . . . 'xxxx.IMSPA.RSET'                                  +
Report Forms . . . . 'xxxx.IMSPA.FORM'                                  +
Expectation Sets . . 'xxxx.IMSPA.EXPQ'                                  +
Object Lists . . . . 'xxxx.IMSPA.OBJL'                                  +
Distributions  . . . 'xxxx.IMSPA.DIST'                                  +

Missing Data Sets Option:
1  1. Allocate now
   2. Allocate when required
```

Figure 15. IMS PA Control Data Sets

2. Enter the required data set names for:
   - Report Sets
   - Report Forms
   - Expectation Sets
   - Object Lists
   - Distributions

   Standard TSO conventions apply. For example, if the TSO option `PROFILE PREFIX` is in effect, the userid will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

3. For any data sets that are not allocated, you can choose to let IMS PA allocate them now or allocate them at the time that you try to perform functions that require them. For example, when you choose option 3 **Report Sets** from the Primary Option Menu, the Report Sets data set can be allocated at that time.
4. If you choose to allocate now and press Enter, for each data set in turn that is not cataloged, a Confirm Create popup is displayed to give you the opportunity to let IMS PA create the data set for you using default allocation attributes.

   Note: The IMS PA Control Data Sets are partitioned data sets. The directory is used to save status information. You can use the operating system utility IEHMOVE and data set utility IEBCOPY for maintenance purposes.

   However, IMS PA creates members in these data sets in a special format. Members must *not* be created or modified using facilities other than IMS PA as this may cause them to become unusable by IMS PA. Should this occur, IMS PA displays a message when it attempts to access those members. For example, if accessing the Report Sets data set, you might see the following message, where *xxxxxxxx* is the name of the first offending member encountered.

   ```
   Only Report Set members in the data set are included in the list.
   At least one member has been excluded - xxxxxxxx
   ```

   Ensure that you specified the correct data set name. If correct, you can use ISPF to determine the offending member or members. For example, use ISPF option 3.1 to display the list of members in the Report Sets data set. Members created by IMS PA will display with no modification details, whereas those edited using ISPF will show their modification details. Then to correct the situation, either:

   - Use ISPF to remove (move or delete) the offending members from the data set.
   - Use IMS PA facilities. When the Report Sets panel is displayed, choose **File** > **Select** from the action bar, or enter SELECT in the command line, and specify the name of the offending member. If the contents of the member are valid Report Set details, they will display on the EDIT Report Set panel. Save the Report Set and the member will appear in the list of Report Sets in the specified sort order. If it is not a valid Report Set, an error message is displayed.

Specifying the IMS Connect Extensions definitions data set

To specify the IMS Connect Extensions Definitions Data Set, select dialog option 0.5 **IMS Connect Extensions Definitions Data Set**.

About this task

The following figure shows the window where you can enter the data set name.

```
              IMS Connect Extensions Definitions Data Set
Command ===> ____________________________________________________________

Specify the name of the IMS Connect Extensions Definitions Data Set.

Data Set Name  . . . 'CEX.REPOSTRY'                                    +
```

Figure 16. IMS Connect Extensions Definitions Data Set

Specify the name of the data set that contains the IMS Connect Extensions definitions that you want IMS PA to work with.

The data set defines IMS Connect Systems that are required for running IMS PA Connect (CEX) Report Sets.

When you specify the name of the data set, normal ISPF data set conventions apply. Fully qualified data set names must be enclosed in quotes unless `PROFILE NOPREFIX` is set.

Chapter 6. Guided tour

This guided tour is for both experienced and first-time users of IMS Performance Analyzer. It leads you step-by-step through many of the features of the ISPF dialog and highlights the major features new to this version.

Summary

The tour is split into five sessions: each session is designed to be completed in a single sitting in under 20 minutes. Subsequent parts assume that you have completed the previous parts.

Throughout the tour, you will need to view report output using SDSF or other program of choice. For instructions on how to use SDSF, see "Viewing or printing report output" on page 131.

Here is a summary of the tour:

Session 1: Setting up your environment

This session shows you how to set up your IMS PA environment.

Configuring your IMS Performance Analyzer ISPF dialog profile

To use IMS Performance Analyzer, you must first set up your IMS Performance Analyzer ISPF dialog profile.

Procedure

1. Start the IMS Performance Analyzer ISPF dialog.

   Upon entry to the IMS PA dialog, you will be presented with the IMS PA primary option menu.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
              IMS Performance Analyzer 4.4 - Primary Option Menu
Option ===> 0
──────────────────────────────────────────────────────────────────────────────

0  IMS PA Profile     Customize your IMS PA dialog profile
1  System Definitions Specify IMS and Connect systems and OMEGAMON files
2  Groups             Specify Groups of IMS and Connect systems (Sysplexes)
3  Report Sets        Request and submit reports and extracts
4  Expectation Sets   Define Expectation Sets (Log exception reporting)
5  Averages           Edit Averages data sets (Log exception reporting)
6  Object Lists       Define Object Lists
7  Distributions      Define Distributions
8  Graphing & Export  Graph or export Log Extract by Interval data
9  IMS Connect        Submit IMS Connect report requests
10 Report Forms       Define Report Forms
X  Exit               Terminate IMS PA
```

Figure 17. Primary Option Menu

2. On the IMS PA primary option menu, select option 0 **IMS PA Profile** to display the IMS PA Profile Options Menu.

```
            IMS PA Profile Options Menu
Option ===> 1
──────────────────────────────────────────

1  IMS PA Settings
2  Reporting Allocation Settings
3  Shared Queue Settings
4  IMS PA Control Data Sets
5  IMS Connect Extensions Definitions Data Set
X  Exit
```

Figure 18. Profile Options Menu

   If you don't review and complete the profile settings yourself, then IMS PA will allocate new data sets on your behalf when it needs them to save your report requests.

3. Select option 1 **IMS PA Settings** (you could also select option 0.1 from the Primary Menu). Ensure that your IMS PA load library correctly specifies the name of the library that contains the IMS PA link/load modules. Also customize your Job Statement Information so you can easily find your report

output.

```
                              IMS PA Settings
Command ===> ____________________________________________________________

Specify settings:

Delete Confirmation  . . . . . YES     (Yes or No)
Warning Confirmation . . . . . NO      (Yes or No)
Automatic Save on Exit . . . . YES     (Yes, No or Prompt)
Reports in Upper Case  . . . . NO      (Yes or No)
Preferred Date Format  . . . . 1  1. Sorting (YYYY/MM/DD)
                                  2. US (MM/DD/YYYY)
                                  3. European (DD/MM/YYYY)
DASD Work File Unit Name . . .  ________  (Blank for System Default)
Permanent ISPF Table Library   IPITABL
IMS PA Load Library  . . . . . 'IMSPA.SIPILINK'
GDDM-PGF Load Library  . . . . 'SYS1.SADMMOD'
ITKB Load Library  . . . . . _____________________________________________
User Program Load Library  . . _____________________________________________

Job Statement Information:
===> //userid JOB (ACCOUNT),'NAME'
===> ____________________________________________________________________
===> ____________________________________________________________________
===> ____________________________________________________________________

JES2 Control Statements (DBRC Log Selection only):
===> /*XEQ
===> /*JOBPARM SYSAFF=
===> /*ROUTE PRINT
```

Figure 19. IMS PA Settings

4. If you want to run IMS Connect reports, select option 0.5 **IMS Connect Extensions Definitions Data Set**. Specify the name of your IMS Connect Extensions Definitions Data Set to identify your IMS Connect systems to IMS PA. There is no default DSN.

   Prerequisite: To run IMS Connect reports, you must have IMS Connect Extensions for z/OS installed. This is required for "Session 4: Creating IMS Connect reports" on page 106 and part of Chapter 17, "Designing Report Forms," on page 229 of this tour.
5. Press **Exit** (**F3**) and return to the IMS PA primary option menu.

Defining IMS subsystems to be reported

Before requesting IMS PA reports, you must first define your IMS subsystems, group them for shared queues reporting purposes, and specify their associated Log and Monitor Files.

About this task

If you are migrating from a previous release of IMS PA, your existing Log and Monitor File specifications will be converted to System Definitions automatically, and you can skip the following procedure.

Procedure

1. From the IMS PA primary option menu, select option 1 **System Definitions**.

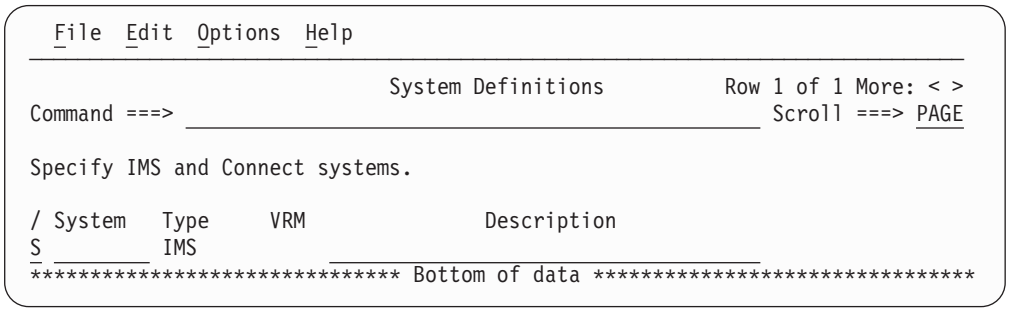


Figure 20. System Definitions

Scroll **Left** (**F10**) or **Right** (**F11**) to see all columns. Notice the **Files** indicators. They indicate what type of report processing is available for each subsystem, and depend on what you specify in the system definition. A value of "Yes" indicates that you have defined DBRC, Log, or Monitor details for the system. Let's define some subsystems now.

2. To add a new system definition, enter line action **S** next to the first empty row. If systems are already defined:
   a. Enter line action **I** to insert a new row.
   b. Enter line action **S** next to the empty new row.

   The IMS Subsystem panel is displayed.

How the panel is organized

Notice that the IMS Subsystem panel is split into three sections. The top section, which contains the general description of the IMS subsystem, is static. The middle section displays a prompt to **Specify required view**. Changing the view affects the lower section of this panel, allowing you to specify additional information for this subsystem: DBRC settings, Log, Monitor, TRF and ATF files, and Groups. Alternatively, you can press **Left** (**F10**) or **Right** (**F11**) to scroll through the views.

To start reporting, you only need to specify the IMS Subsystem ID. However for completeness, we will enter the entire definition of this system.

```
                                IMS Subsystem                        More: < >
Command ===> ____________________________________________________________________

IMS Subsystem definition:
 IMS Subsystem ID  . . . . PR01  IMS Version (VRM) . . . 151  +
 Description . . . . . . . IMS Production System 1
 RESLIB Data Set . . . . . IMS.V151.SDFSRESL
------------------------------------------------------------------------------
Specify required view . . 1  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
------------------------------------------------------------------------------
Specify DBRC Settings for automated log file selection:

DBRC Subsystem ID . . . ________  (Specify RSENAME for XRF)
DBRC IMSplex name . . . _____     (RECON Loss Notification)
DBRC Sharing Group ID . ___       (Parallel RECON Access)
RECON Data Set 1  . . . _____________________________________________
               2  . . . _____________________________________________
               3  . . . _____________________________________________
MDA Data Set  . . . . . _____________________________________________

Enter "/" to select option         JES2 options:
_  Log Data Sets are Cataloged      (DBRC) Node . . ________  SYSAFF . . ____
_  Use OLDS that are not Archived   (SLDS) Node . . ________  SYSAFF . . ____
_  Use Secondary Log Data Sets
_
```

Figure 21. IMS Subsystem: DBRC Settings

3. Let's define an IMS V15 system called PR01, which is a production system. In the top section of the panel, enter your IMS Subsystem ID, IMS version, description, and RESLIB data set.
4. In the bottom section of the panel, specify DBRC settings for the IMS subsystem. The MDA Data Set specification is used by DBRC Log Selection to dynamically allocate the RECON data sets. Alternatively you can specify the RECON data set names.
5. Specify **required view** option 2 or scroll right to switch to your Log Files specification.

   The Log Files data sets contain the data required for your current Log reporting requirements. At Log report run time, you choose whether to use these Log Files or DBRC Log Selection.

   From the Log Files View, we have specified two Log File data set names. The data sets must be specified in time sequence, as this is the order in which IMS PA will process them.

   Note: Notice that we have excluded the first file. At Log report run time, IMS PA will ignore excluded data sets and generate DD statements only for the included Log File data sets.

```
                                IMS Subsystem            Row 1 of 2 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

IMS Subsystem definition:
 IMS Subsystem ID  . . . . PR01  IMS Version (VRM) . . . 151  +
 Description . . . . . . . IMS Production System 1
 RESLIB Data Set . . . . . IMS.V151.SDFSRESL
--------------------------------------------------------------------------------
Specify required view . . 2  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
--------------------------------------------------------------------------------
Specify the Log Files (in time sequence) for this subsystem:

/  Exc              Data Set Name (DSN)                UNIT +  SEQ VOLSER +
X   *  'PR01.V151.SLDSP.PR01.D17231.T1413081.VD2'     ________ ___ ______
_      'PR01.V151.SLDSP.PR01.D17231.T1413081.VD3'     ________ ___ ______
****************************** Bottom of data ********************************
```

Figure 22. IMS Subsystem: Log Files

6. Specify **required view** option 3 or scroll right again to switch to your Monitor Files specification.

   From the Monitor Files View, we have specified a Monitor file data set name. At Monitor report run time, IMS PA will generate a DD statement for this Monitor File data set.

```
                                IMS Subsystem            Row 1 of 1 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

IMS Subsystem definition:
 IMS Subsystem ID  . . . . PR01  IMS Version (VRM) . . . 151  +
 Description . . . . . . . IMS Production System 1
 RESLIB Data Set . . . . . 'IMS.V151.SDFSRESL'
--------------------------------------------------------------------------------
Specify required view . . 3  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
--------------------------------------------------------------------------------
Specify the Monitor Files (in time sequence) for this subsystem:

/  Exc              Data Set Name (DSN)                UNIT +  SEQ VOLSER +
_      'PR01.MONITOR'
****************************** Bottom of data ********************************
```

Figure 23. IMS Subsystem: Monitor Files

7. Specify Required View option 4 or scroll right again to switch to the Groups specification.

   Groups is a facility that enables you to group IMS subsystems together for reporting purposes. From the Groups View, specify a meaningful name to describe your group of systems. For example, here we have specified that this system belongs to a Group called PRODPLEX.

```
                              IMS Subsystem            Row 1 of 1 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

IMS Subsystem definition:
 IMS Subsystem ID  . . . . PR01  IMS Version (VRM) . . . 151  +
 Description . . . . . . . IMS Production System 1
 RESLIB Data Set . . . . . 'IMS.V151.SDFSRESL'
--------------------------------------------------------------------------------
Specify required view . . 4  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
--------------------------------------------------------------------------------
Specify the Groups that this subsystem belongs to:

/  Group +                 Description
_  PRODPLEX   Production Sysplex
****************************** Bottom of data ********************************
```

Figure 24. IMS Subsystem: Groups

At report run time, select either an individual system or a Group to be reported. In the next part of this session, we will discuss how to maintain our Group definitions.

8. Now that we have completed our definition of this IMS subsystem, press **Exit** (**F3**) to save your specifications and return to the System Definitions list.

   If you wish, define a second IMS subsystem called PR02 by inserting a new row and repeating steps 3 on page 83 to 7 on page 84. Alternatively if system PR02 is similar to PR01, use line action **R** to repeat PR01, then select PR02 to update it.

```
  File  Edit  Options  Help
_______________________________________________________________________________
                            System Definitions          Row 1 of 2 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

Select to specify input files.                    Auto_File
                         -------- Files -------   Selection
/ System   Type     VRM  Log  Mon  CEX  TRF  ATF  DBRC  CEX
I PR01     IMS      151  Yes  Yes       No   No   Yes
_ PR02     IMS      151  Yes  Yes       No   No   Yes
****************************** Bottom of data ********************************
```

Figure 25. System Definitions: IMS Subsystem

Notice the **Files** indicators located to the right of each IMS system. Since we completed all aspects of system definition, all reporting options are available:

- DBRC value of "Yes" indicates that DBRC Log Selection is available for the subsystem.
- Log value of "Yes" indicates that Log file data set names are specified and eligible for inclusion in the Log report JCL when this system is selected.
- Monitor value of "Yes" indicates that Monitor file data set names are specified and eligible for inclusion in the Monitor report JCL when this system is selected.
- TRF value of "Yes" indicates that OMEGAMON TRF extractor file data set names are specified and eligible for inclusion in the TRF report JCL when this system is selected.

- ATF value of “Yes” indicates that OMEGAMON ATF journal data set names are specified and eligible for inclusion in the ATF report JCL when this system is selected.

9. Press **Exit** (**F3**) to save your specifications and return to the IMS PA primary option menu.

Assigning subsystems to a Group for shared queues reporting

In this section, we will assign subsystems to a Group for shared queues (sysplex) reporting.

Procedure

1. First, let's review our Group definitions. From the IMS PA primary option menu, select option 2 **Groups**.

   This is where you maintain your Group definitions.

```
                                   Groups                      Row 1 to 1 of 1
Command ===> NEW                                              Scroll ===> PAGE

Specify Groups of IMS and Connect systems.
                                                    ---- IMS ----  -- Connect --
/ Group                Description                   # Auto Files   # Auto Files
_ PRODPLEX Production IMS Sysplex                    0 No   No      0 No   No
****************************** Bottom of data ********************************
```

Figure 26. Groups

   Notice that our Production Sysplex Group PRODPLEX is already defined. When we defined our IMS system PR01 we assigned it to this Group. IMS PA recognized PRODPLEX as a new Group and automatically registered it for us. Group PRODPLEX has two IMS subsystems that belong to it.

   The **Files** indicators have special significance for Groups:

   - DBRC value of “Yes” indicates that all IMS subsystems in the Group are eligible for DBRC Log Selection.
   - Log value of “Yes” indicates all IMS subsystems in the Group have Log Files specified.

   Tip: Use DBRC Log Selection for Group reporting to ensure that the Log Files for all subsystems in the Group contain data for the required reporting time interval.

2. Enter NEW on the command line to define a new Group.

```
 File  Edit  Options  Help
-------------------------------------------------------------------------------
                            Group of Systems               Row 1 to 1 of 1
Command ===> _____________________________________________ Scroll ===> PAGE

Group . . . . . TESTPLEX
Description . . . IMS Test Sysplex_____________________

DBRC options:                      JES2 options:
 IMSPLEX . . . _____                (DBRC) Node . . ________  SYSAFF . . ____
 DBRCGRP . . . ___                  (SLDS) Node . . ________  SYSAFF . . ____

                                                    --- IMS -- - Connect-
/ System + Type    VRM Description                 Auto Files Auto Files

_ ________
****************************** Bottom of data ******************************
```

Figure 27. Group of Systems: Define new group

3. Enter a name for the Group, for example, TESTPLEX, and a description for it.
4. Press **Exit** (**F3**) to save the group and return to the list. Notice the new group has been added, but has no IMS or IMS Connect systems defined to it.
5. To add IMS or IMS Connect systems to a Group, or edit your Group definition, enter line action **S** to select the Group and display the list of systems that belong to it.

   You can maintain your Group definition from here by adding or removing IMS or IMS Connect systems.

```
 File  Edit  Options  Help
-------------------------------------------------------------------------------
                            Group of Systems          All Systems selected
Command ===> _____________________________________________ Scroll ===> PAGE

Group . . . . . TESTPLEX
Description . . . IMS Test Sysplex_____________________

DBRC options:                      JES2 options:
 IMSPLEX . . . _____                (DBRC) Node . . ________  SYSAFF . . ____
 DBRCGRP . . . ___                  (SLDS) Node . . ________  SYSAFF . . ____

                                                    --- IMS -- - Connect-
/ System + Type    VRM Description                 Auto Files Auto Files
_ PR01     IMS     121 IMS Production System 1     Yes  Yes
_ PR02     IMS     121 IMS Production System 2     Yes  Yes
****************************** Bottom of data ******************************
```

Figure 28. Group of Systems: Define IMS sysplex

6. To add a new IMS or IMS Connect system, insert a new line by entering line action **I** next to any system.
7. On the empty line, tab to the System field and press **Prompt** (**F4**). A pick list displays, containing all IMS and IMS Connect systems you have defined to IMS PA. Select a system from this list and press **Exit** (**F3**) to save your selection.
8. To replace a system in your Group, you can enter line action **S** next to it. A pick list appears for you to make your selection.
9. When you have finished, press **Exit** (**F3**) and return to the IMS PA primary option menu.

   This is the end of the first session of the tour.

Session 2: Requesting log reports

This session shows you how to request reports to run against IMS Log data for the defined systems. You will run individual log reports, create and run sets of log reports, and view report output.

Running individual reports in IMS Performance Analyzer

In this session, we will submit report requests to run in batch and view the report output.

Procedure

1. Select option 3 **Report Sets** from the IMS PA primary option menu.

   The first time you enter, you will be prompted to create your Report Sets data set. This is where IMS PA will save your report requests. Press Enter to create the data set using default settings.

   You can change the Report Sets data set name using option 0.4 **IMS PA Control Data Sets** from the IMS PA primary option menu.

> **Report Sets**
>
> Report Sets reside as members in the Report Sets data set, as defined in option 0.4 **IMS PA Control Data Sets**. When the Report Sets data set is empty, IMS PA automatically inserts two sample Report Sets: SAMPLOG for Log reporting and SAMPMON for Monitor reporting. These Report Sets request some of the more common IMS PA reports and can be used as a model when creating new Report Sets. Later in this session, we will look at how Report Sets can be used.

   You can run reports individually or you can run a series of reports as a Report Set. Let's run some individual log reports using the sample Report Set.

2. Enter line action **S** next to the SAMPLOG Report Set.

```
  File  View  Options  Help
──────────────────────────────────────────────────────────────────────────────
                              Report Sets                   Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> PAGE

Report Sets Data Set . . . . : USER.IMSPA.RSET

/     Name    Type           Description               Changed        ID
S    SAMPLOG  LOG  Sample Log Report Set           2018/08/13 16:45 USR
___  SAMPMON  MON  Sample Monitor Report Set       2018/12/19 09:59 USR
****************************** Bottom of data ********************************
```

Figure 29. Report Sets

   The SAMPLOG Report Set is displayed, showing a list of all available reports in a tree structure format.

3. Use line action **S** next to a report category to expand or contract the selection. Expand the **Resource Usage & Availability Reports** category.

   In the next few steps, we will run two log reports from this category.

```
  File  View  SysDefs  Options  Help
--------------------------------------------------------------------------------
EDIT                       Report Set - SAMPLOG                   Line 1 of 33
Command ===> ____________________________________________________ Scroll ===> PAGE

Description . . . Sample Log Report Set

Enter "/" to select action.

___           ** Reports **                              Active
     -  ___   Options                                      Yes
             ___  Log Global                               Yes
     -  ___   Transaction Transit Reports                  Yes
             ___  Transit Options                          Yes
             ___  Analysis                                 Yes
             ___  Statistics                               Yes
             ___  Log                                      No
             ___  Graphic Summary                          No
             ___  Extract by Interval                      Yes
             ___  Transaction Exception                    Yes
             ___  Transaction History File                 Yes
     +  ___   Transaction Transit Reports (Form-based)     No
     -  ___   Resource Usage & Availability Reports        Yes
             ___  Dashboard                                Yes
             ___  Management Exception                     Yes
             ___  Transaction Resource Usage               No
             ___  Resource Availability                    Yes
             ___  CPU Usage                                Yes
             ___  Internal Resource Usage                  Yes
             ___  MSC Link Statistics                      No
             ___  Message Queue Utilization                No
             ___  Database Update Activity                 Yes
             ___  Region Histogram                         No
             ___  OSAM Sequential Buffering                No
             ___  Deadlock                                 Yes
             ___  System Checkpoint                        Yes
             ___  BMP Checkpoint                           No
             ___  Gap Analysis                             No
             ___  Cold Start Analysis                      No
     +  ___   Fast Path Transit Reports                    No
     +  ___   Fast Path Resource Usage Reports             No
     +  ___   ATF Enhanced Summary Reports                 No
     +  ___   Trace Reports                                No
        ___   User-Written Reports                         No
        ___   ** End of Reports **
```

Figure 30. Report Set: SAMPLOG

4. Enter **RUN** in the line action field next to **Dashboard**.

   Prior to the generation of Report Set JCL, the Run Report Set panel is displayed. This panel prompts you to check or change your runtime options before IMS PA generates the JCL to run your report.

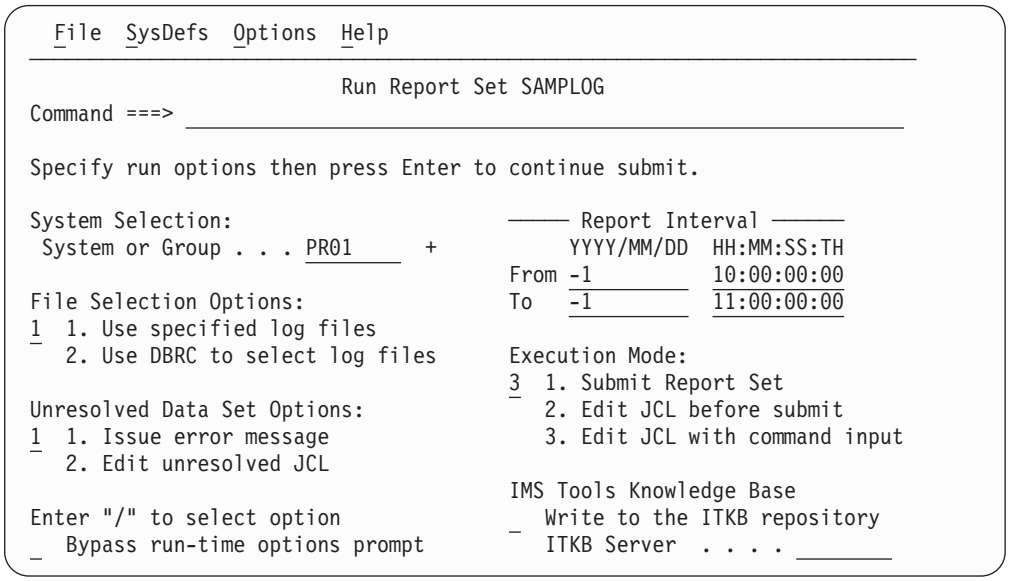


Figure 31. Report Set: SAMPLOG

Report Interval specifies the time period that you wish to report against. Notice the use of relative dates. Specify 0 for today, -1 for yesterday, and so on.

System Selection specifies the IMS system or Group you wish to report against. You can type in the system name directly, for example PR01, or you can press **Prompt** (**F4**) to select a system from a prompt list.

Additional runtime options include:

- **Log Selection Options** to request that IMS PA use our specified Log file data sets in preference to DBRC Log Selection.
- **Execution Mode** to request that IMS PA generate JCL with command input.
- To redirect output to the IMS Tools Knowledge Base, select **Write to the ITKB repository** and specify the ITKB server name.

5. Press Enter to generate the Report Set JCL. If required, the JCL can be edited prior to submission.

```
//IMSPA JOB (ACCOUNT),'NAME'
//*
//* IMS PA Report Set SAMPLOG - Sample Log Report Set
//*
//IPI      EXEC PGM=IPIMAIN,PARM='V151'
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Input Data Set(s)
//LIMS1001 DD  DSN=IMSPA.IMS151.SMQIMS1.LOG,
//             DISP=SHR
//LIMS2001 DD  DSN=IMSPA.IMS151.SMQIMS2.LOG,
//             DISP=SHR
//*  Expectation Sets
//IPIEXPQ  DD  DSN=USER.IMSPA.EXPQ,
//             DISP=SHR
//*  Report run-time options
//IPIOPTS  DD  *
* Reporting Time Range
 IMSPALOG START(-1,10:00:00:00),STOP(-1,11:00:00:00)
//*  SYSOUT Data Set
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  Report Set Command Input
//IPICMD   DD  *
* IMS PA Log Report
* Report Set Name - SAMPLOG
* Description - Sample Log Report Set
* Log Report Global Options
*   Log Input - LOGIN
*   Report Output - RPTOUT
*   Print Lines per Page - 60
*   When Reports are written - STOP
*   Source of IMS Processing ID - DDNAME
          IMSPALOG     INPUTDD(LOGIN),
                       OUTPUTDD(RPTOUT),
                       PAGESIZE(60),
                       PRINTAT(STOP),
                       SETIMSID(DDNAME)
* Dashboard Report
*   Report Output File - DASH
          IMSPALOG     DASHBOARD(
                       DDNAME(DASH))
          IMSPALOG     EXECUTE
/*
```

Figure 32. Dashboard report: JCL

6. Enter SUB on the command line to submit the JCL.

   IMS PA automatically assigns each report a unique DDname. This allows you to view the reports separately in SDSF by using the ? action character in the **NP** column.

   The Dashboard report provides a quick overview of critical system performance indicators. View your report and consider this question:

   Do any critical system performance indicators suggest a potential performance problem?

   For further information on interpreting report output, see “Dashboard Report” in the IMS Performance Analyzer *Report Reference*.
7. Press **Exit** (**F3**) to return to the Report Set list.
8. Enter line action **S** next to **Message Queue Utilization**.

   The report options for the Message Queue Utilization report are displayed.

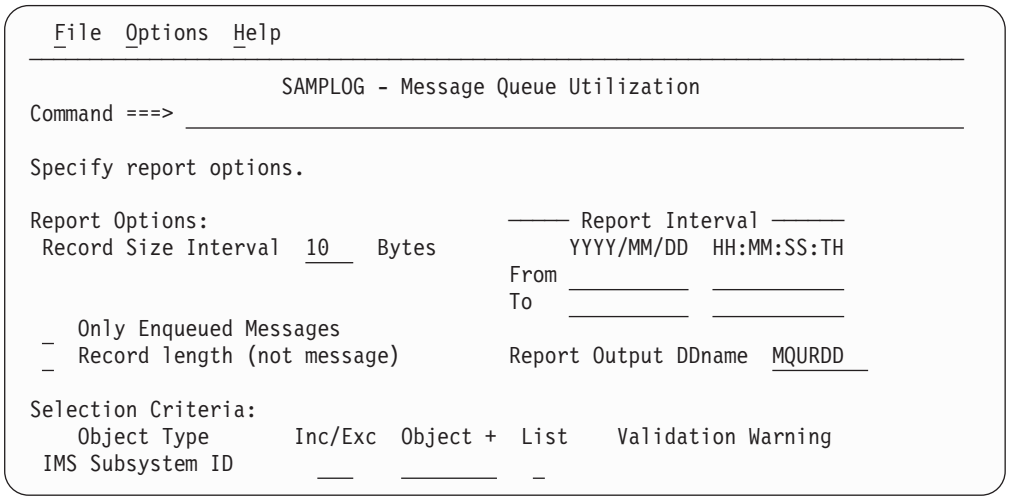


Figure 33. Message Queue Utilization report

Here you can specify options to tailor the report according to criteria you specify. If you do not specify any options here, all report data is included.

Report Options and Selection Criteria

Report Options and Selection Criteria are available for most reports.

Use Report Options to specify report output DDnames, report intervals, selection criteria, and other options specific to the type of report.

Selection Criteria allows you to filter your report. For example, you may wish to restrict reporting to specific IMS subsystems.

9. To run the report:
   a. Type RUN on the command line and press Enter.
   b. When the Run Report Set dialog appears, check your runtime options and then press Enter.
   c. Review your JCL, then type SUB on the command line and press Enter.
10. Press **Exit** (**F3**) and return to the IMS PA primary option menu.

The Message Queue Utilization report contains information on the use of message queues. View your report and consider this question:

Are the message queue lengths evenly distributed?

To answer this question, seek out the 50% line in the report. For further information on interpreting report output, see "Message Queue Utilization Report" in the IMS Performance Analyzer *Report Reference*.

Running a Management Exception report: expectations and averages

In this session we will define an Expectation Set and run a Management Exception report.

Procedure

1. From the IMS PA primary option menu, select option 4 **Expectation Sets**.
2. Type NEW on the command line and press Enter.
3. Specify the name for a new default expectation set. For example, `Quarter1`. Press Enter to create the Expectation Set.
4. Enter some values for the Expectation Set. Press **Help** (**F1**) on each field to see the values you can enter.

```
  File  Edit  Options  Help
------------------------------------------------------------------------------
                      EDIT Expectation Set - QUARTER1          Row 1 to 1 of 1
Command ===> ____________________________________________ Scroll ===> PAGE

Specify the threshold values.

Description  . . . . IMS PA Expectation Set

                ---- Transit Time -----  DB    DC    DB     CPU    Proc
/  TranCode  %  Total Input Proc  Outpt  Calls Calls Waits  Time   Rate
             _  _____ _____ _____ _____  _____ _____ _____  _____  _____
                _____ _____ _____ _____  _____ _____ _____  _____  _____
------------------------------------------------------------------------------
_  *DEFAULT  _  121   5     50          2.1   2           20     0.2
                150   99    120   111   30.1  5     2     50     2
******************************* Bottom of data ********************************
```

Figure 34. Expectation Set

5. Type SAVE on the command line to save your values, then **Exit** (**F3**) and return to the IMS PA primary option menu.

   Before we run the Management Exception report, let's consider the Averages data set. If you are upgrading from a previous version, you probably already have one defined. You can use this for the tour, or if you prefer, you can create a new averages data set and call it AVERAGES.

   To create an Averages data set, use ISPF option 3.2 to allocate and catalog a sequential data set with VB format, a logical record length of 4092, and a PS data set name type.

   Let's now run our Management Exception report.
6. From the IMS PA primary option menu, select option 3 **Report Sets**, and then select the SAMPLOG Report Set.
7. Tab to the **Resource Usage & Availability Reports** category and enter line action **S** next to **Management Exception**.
8. Enter **S** next to all the options for **Reports Required**.

```
                        SAMPLOG - Management Exception
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                       ----- Report Interval ------
/  Transaction Exception/Average             YYYY/MM/DD  HH:MM:SS:TH
   Error Conditions Log:                From __________  ___________
   /  Program Abend                     To   __________  ___________
   /  Backout Failure
   /  Security Violation                Report Output DDname  MGRXDD__
   /  I/O Error
   /  Snap Trace

Report Options
  Processing Type:                      Select to Modify:
  2  1. Exception Report                _  Exception Report Options
     2. Print Averages Data Set         S  Averages Data Sets Specification
  _  Exclude "OTHERS" from report

                                 Validation Warning
  Expectation Set  QUARTER1  +
```

Figure 35. Management Exception report

9. Tab to **Expectation Set** and press **Prompt** (**F4**) and select an Expectation Set from the list.
10. Enter **S** next to **Averages Data Sets Specification** and press Enter.
11. Specify an **Input Data Set** and an **Output Data Set**. You can use the same data set for both.

```
            SAMPLOG - Transaction Averages Data Sets
Command ===> ____________________________________________________

Specify the Averages Data Sets for this Report Set, optionally
indicating whether you want to Edit or View either data set.

Input Data Set:                                    E/V
'IMSPA.AVERAGES.IN'                                 _

Output Data Set:
'IMSPA.AVERAGES.OUT'                                _
```

Figure 36. Transaction Averages Data Sets

12. Press **Exit** (**F3**) to return to the Management Exception options.
13. Under **Report Options**, select option 2 **Print Averages Data Set**.
14. Run the report and submit your JCL.
15. Press **Exit** (**F3**) and return to the IMS PA primary option menu.

The Management Exception report shows which operands are outside the boundaries specified in Expectation Sets. View your report and consider these questions:

- Which performance indicators are outside specified boundaries?
- Did any transactions or programs abend in a deadlock?
- Which other reports would you use to investigate these problems?

For further information on interpreting the report output, see "Management Exception Report" in the IMS Performance Analyzer *Report Reference*.

Obtaining extracts and creating graphs

In this session we will obtain a log extract, export it to our PC, and create a graph using Microsoft Excel.

Before you begin

The following procedure assumes that your PC has Microsoft Windows and Microsoft Office installed. If you have a different operating system or spreadsheet tool, modify the following steps to suit your environment.

Procedure

1. Select option 3 **Report Sets** from the IMS PA primary option menu.
2. Enter line action **S** next to the SAMPLOG Report Set.
3. Enter line action S next to the **Options** category, and then enter line action **S** next to the **Log Global** option.

   Log Global Options affect the data that is included in all reports and extracts.
4. Check the options and change them where appropriate. Enter **/** next to **Use Comma as Delimiter Character**. To simplify this example, deselect the **Activate inflight processing** option.

```
                        SAMPLOG - Log Global Options
Command ===> ____________________________________________________________

Specify Log Global options.

Extract Options:                          ----- Report Interval ------
  Include Field Headings                       YYYY/MM/DD  HH:MM:SS:TH
/ Use Comma as Delimiter Character      From _____________ ____________
                                        To   _____________ ____________
Processing Options:
_ Ignore Log Sequencing Errors          Report Output DDname  RPTOUT

Report Options:
Report Break Points . . . STOP  (HOUR, STOP, EOF or nnnn Minutes)
Print Lines per Page  . . 60    (1-255)
/ Print "%" sign in Report output

Run-time Options:
_ Activate inflight processing
  Inflight DSN  . . . ____________________________________________________
  Outflight DSN . . . ____________________________________________________

User Exit:                                Source of IMS Processing ID:
 Transaction Substitution . . ________    1 1. Log input file DDname
                                            2. Log records
```

Figure 37. Log Global Options

5. Press **Exit** (**F3**) to return to the Report Set.

   Let's do the extract.
6. Enter line action **S** next to **Transaction Exception** in the **Transaction Transit Reports** category.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                        SAMPLOG - Transaction Exception
Command ===> ________________________________________________________________

Specify report options.

Reports Required:                      ───── Report Interval ──────
/  Transaction Code                         YYYY/MM/DD  HH:MM:SS:TH
_  User ID                             From __________  ___________
_  Class                               To   __________  ___________
_  Time (Interval: 15 Minutes)
                                       Report Output DDname  TRANEXC
Report Options:
_  Transaction Totals Only
_  Shared Queue Details
_  Print Expectations
_  Extended format

Transaction Limits:           Validation Warning
 Expectation Set  ________  +

Extract Data Sets:
 Total Traffic      ______________________________________________
 Exception Traffic  ______________________________________________

Selection Criteria:
    Object Type      Inc/Exc  Object +  List    Validation Warning
 Transaction Code      ___    ________   _
 User ID               ___    ________   _
 Class                 ___    ________   _
```

Figure 38. Transaction Exception

7. To produce an extract, you must enter the name for the **Total Traffic** Extract Data Set. For example, `'IMSPA.EXTRACT.TRANEXC'`. We will later transfer to this data set to our PC for building our graph.

   Note: If the data set has not already been cataloged, IMS PA will automatically catalog it for you.
8. Repeat step 9 on page 92 to run the report, then press **Exit** (**F3**) until you have returned to the IMS PA primary option menu.

   We will now export the extract to a plain text file on our PC, and graph the data using Microsoft Excel.
9. Use your terminal emulator to transfer the extract file, 'IMSPA.EXTRACT.TRANEXC', to your PC. Call it `tranexc.txt`.
10. On your PC, start Microsoft Excel.
11. Select **File** > **Open** from the menu bar.
12. Locate the workstation file containing the exported data and open it. The Text Import Wizard is displayed.
13. Select **Fixed width** as the file type that best describes the data and click **Next**.
14. Select General as the column data format, check the data columns have been properly defined, and click Finish. The data spreadsheet is displayed.
15. Hold down the Ctrl key and click the column headers to highlight the columns of data you wish to graph.
16. Select **Insert** > **Chart** from the menu bar to open the Chart Wizard.

17. Step through the Wizard to select the required type and format for your graph.

The Transaction Exception Extract contains detail of all transaction activity. View your graph and consider this question:

Are there any momentary surges in transaction input?

For further information on interpreting report output, see "Transaction Exception Report" in the IMS Performance Analyzer *Report Reference*.

Obtaining extracts and querying with DB2

In this session we will obtain a log extract and use it as the basis for a DB2 query.

Procedure

1. Select option 3 **Report Sets** from the IMS PA primary option menu.
2. Enter line action **S** next to the SAMPLOG Report Set.
3. Tab to the Transaction Transit Reports category, and enter line action **S** next to **Transit Options**.

   Transit Options affect the data that is included in the Transaction Transit reports and extracts. Check the options and change them where appropriate. For example, you may want to change Processing Limits to 60 seconds, and Time Interval to 15 minutes. Also select your required report options.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                      SAMPLOG - Transaction Transit Options
Command ===> _________________________________________________________________

Specify Transit options.

Processing Options:
 Peak Transaction Time Percentage    75       (50-100%)

Report Options:
_  Include MSC Transactions
_  Include BMP Transactions
_  Include APPC/OTMA Transactions
_  Include Message Switches
_  Report All Transactions

Processing Limits:
 Input Queue Time (INMAX) . . . . . 60     Seconds
 Output Queue Time (OUTMAX) . . . . 60     Seconds
 Transaction Set Size . . . . . . . 32767  (1-32767)

Interval Options:
 Time Interval  . . . . . . . . . . 15    Minutes
 Align Time Interval to Even Hour   NO    (Yes or No)

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _

Note: INMAX/OUTMAX is ignored if BMPs or Message Switches are included.
```

Figure 39. Transaction Transit Options

   Let's do the extract.

4. Press **Exit** (**F3**) to return to the Report Set.
5. Enter line action **S** next to Transaction History File in the Transaction Transit Reports category.

```
                      SAMPLOG - Transaction History File
Command ===> ____________________________________________________________

Specify extract options.

Interval Options:                          ----- Report Interval ------
 Time Interval  00:15:00  (hh:mm:ss)            YYYY/MM/DD  HH:MM:SS:TH
                                           From __________  ___________
                                           To   __________  ___________

                                           Recap Report DDname   TRANHIST

Transaction History DSN:
 Data Set Name . . . 'IMSPA.EXTRACT.TRANHIST'

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
```

Figure 40. Transaction History File

To produce an extract, you must enter the name for the **Transaction History DSN**. For example, `'IMSPA.EXTRACT.TRANHIST'`. We will later query this extract using DB2.

Note: If the data set has not already been cataloged, IMS PA will automatically catalog it for you.

6. Run the report, then press **Exit** (**F3**) until you have returned to the IMS PA primary option menu.

   We will now query the extract in DB2 using QMF™.
7. From the SIPISAMP library supplied with IMS PA, copy the following members to your working library:
   - IPITHDDL
   - IPITHLOD
   - IPITHQM2
8. Run the IPITHDDL and IPITHLOD jobs using the settings described in "Understanding the Transaction History File" on page 759.
9. From ISPF, invoke QMF.
10. Press F6 to commence an SQL query.
11. Copy and paste the SQL in IPITHQM2 into your QMF screen and press F2 to run the query.

The Transaction History File is used to collect historical performance data. View the results of your query and consider how you might use this to assist with long term capacity planning.

For further information on interpreting report output, see "Transaction History File" in the IMS Performance Analyzer *Report Reference*.

Creating and running Report Sets

A Report Set contains a series of report requests. When you submit a Report Set for batch processing, IMS PA generates a one-step JCL deck to run the report requests.

About this task

In the following procedures we create a Report Set that enables us to analyze transit patterns. We will include the following reports: Graphic Summary, Transit Analysis, Transit Statistics, and Region Histogram.

Procedure

1. From the IMS PA primary option menu, select option 3 **Report Sets**. A list of Report Sets stored in the Report Sets Data Set is displayed.
2. Enter NEW on the command line to create a new Report Set.

```
                          New Report Set

Specify the name of the new Report Set and the type or model.

Name . . . PATTERNS

Type . . . 1  1. Log
              2. Monitor
              3. IMS Connect (includes combined)
              4. OMEGAMON TRF
              5. OMEGAMON ATF
              6. MODEL (specified below)

Model  ____________________________________________________________

Press Enter to create the Report Set.
Enter Exit or Cancel to cancel the request.
```

Figure 41. New Report Set

3. Create a Report Set named PATTERNS and request that it analyze Log data. Press Enter to create the new Report Set. The Report Set edit panel is displayed.

```
EDIT                       Report Set - PATTERNS                  Line 1 of 52
Command ===> _____________________________________________ Scroll ===> PAGE

Description . . . Pattern analysis reports

Enter "/" to select action.

___          ** Reports **                            Active
     -  ___  Options                                    Yes
            ___  Log Global                            Yes
     -  ___  Transaction Transit Reports               Yes
            ___  Transit Options                       Yes
            A__  Analysis                              Yes
            A__  Statistics                            Yes
            ___  Log                                   No
            A__  Graphic Summary                       Yes
            ___  Extract by Interval                   No
            ___  Transaction Exception                 No
            ___  Transaction History File              No
     -  ___  Transaction Transit Reports (Form-based)  No
            ___  Transit Options                       No
            ___  List                                  No
            ___  Summary                               No
            ___  Transaction Index                     No
     -  ___  Resource Usage & Availability Reports     Yes
            ___  Dashboard                             No
            ___  Management Exception                  No
            ___  Transaction Resource Usage            No
            ___  Resource Availability                 No
            ___  CPU Usage                             No
            ___  Internal Resource Usage               No
            ___  MSC Link Statistics                   No
            ___  Message Queue Utilization             No
            ___  Database Update Activity              No
            A__  Region Histogram                      Yes
            ___  OSAM Sequential Buffering             No
⋮
```

Figure 42. Report Set

Notice the column heading **Active**. When you create a new report, they are all initially set to **No**. To include a report in a Report Set, you need to activate it.

4. Use line action **A** to activate the following reports: **Analysis**, **Statistics**, and **Graphic Summary** in the **Transaction Transit Reports** category; and **Region Histogram** in the **Resource Usage & Availability Reports** category.

   Note: When you activate a report, any relevant options are also activated, such as **Log Global** and **Transit Options**. Log Global options apply to every report and the Transit Options apply to reports in the Transaction Transit category only.

5. Use line action **S** to review and edit the report options for the Transaction Transit Analysis report.

   This report summarizes end-user response time by various criteria, such as by Transaction Code or User ID. You can change the initial default report settings to meet your requirements. For example, you may wish to restrict reporting to transaction codes whose name starts with TR.

```
                PATTERNS - Transaction Transit Analysis
Command ===> ____________________________________________________________

Specify report options.

Report Required:                          ----- Report Interval ------
/  Transaction code                            YYYY/MM/DD  HH:MM:SS:TH
_  LTERM                                  From __________  ___________
_  LTERM-TRANCODE                         To   __________  ___________
_  Line or VTAM Node
_  Class                                  Transaction Source:
_  Time (Interval: 15 Minutes)            1  1.LTERM
                                          _  2.User ID
Report Options:
_  Report All Transactions

Selection Criteria:
    Object Type     Inc/Exc  Object +  List    Validation Warning
 Transaction Code     INC    TR*       _
 LTERM                ___    ________  _
 Line                 ___    ________  _
 VTAM Node            ___    ________  _
 Class                ___    ________  _
 User ID              ___    ________  _
```

Figure 43. Transaction Transit Analysis

6. After completing your review of the options, press **Exit** (**F3**) to return to the Report Set.
7. Use line action **S** to review and edit the report options for the Transaction Transit Statistics report.

   This report is a graphical representation of the information in the Transaction Transit Analysis report. report. You can produce graphic representations of transit time statistics based on Transaction Code, Logical Terminal, User ID, Transaction Code within Logical Terminal or User ID, Line or VTAM Node, Message Class, and Time of Input.

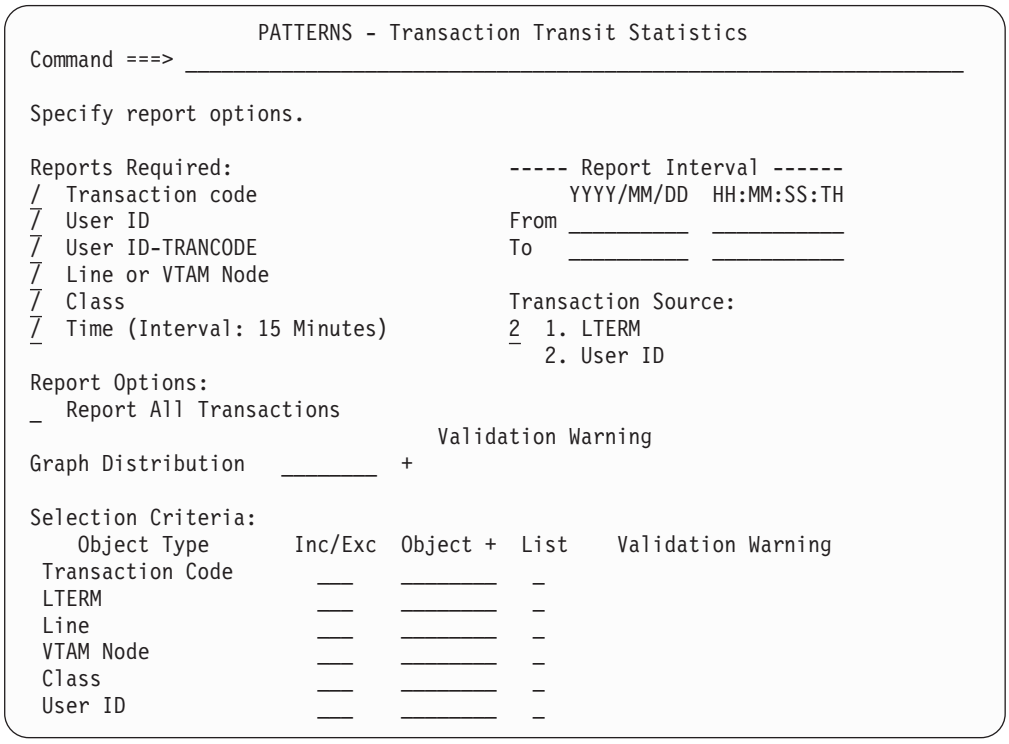


Figure 44. Transaction Transit Statistics

After completing your review of the options, press **Exit** (**F3**) and return to the Report Set.

8. Save the Report Set using the SAVE command.
9. Run the Report Set using the RUN command. Only the active reports (in active report categories) will be included.
10. If required, the JCL can be edited prior to submission. Submit the JCL using the SUB command.
11. Press **Exit** (**F3**) and return to the Primary Option Menu.

The Transaction Transit reports are stored in the DDname you specified in the Transit Options. The default is RPTOUT. The Region Histogram is stored, by default, in HISTDD. View your reports and consider these questions:

- Are there any spikes in transit times?
- Why did these spikes occur?
- Is there a pattern between different times?
- What is the pattern of transaction scheduling in each region?

For further information on interpreting the report output, see "Transaction Transit Analysis Report", "Transaction Transit Statistics Report", "Transaction Transit Graphic Summary", and "Region Histogram Report" in the IMS Performance Analyzer *Report Reference*.

This is the end of the second session of the tour.

Session 3: Creating Monitor reports

This session shows you how to create distributions from which you can build customized graphical reports, and examines monitor reporting.

Specifying a distribution and building a graph for communication reporting

This session describes how to create a distribution we can use to customize our graphical reports.

About this task

For a list of reports that can produce distribution graphs, see "Distribution and Report cross-reference" on page 161. The table also lists applicable sample distributions supplied with IMS PA. We will use our Distribution to create a Communication report.

Procedure

1. Select option 7 **Distributions** from the IMS PA primary option menu. The Distributions panel is displayed.

   IMS PA supplies 24 sample distributions in the default Distributions data set.

```
  File  View  Options  Help
──────────────────────────────────────────────────────────────────────────────
                                Distributions                  Data set created
Command ===> ________________________________________________  Scroll ===> PAGE

Distributions Data Set . . : USR.IMSPA.DIST

/    Name             Description                       Changed          ID
_  $IPDIST1  CPU Report Processing Time        2018/12/18 16:41  USR
_  $IPDIST2  CPU Report Elapsed Time           2018/12/18 16:41  USR
_  COMMELP   Communication Line elapsed        2018/12/18 16:41  USR
_  COMMIWE   Communication Line IWAIT elapsed  2018/12/18 16:41  USR
_  COMMLFI   Line Func - Turnaround interval   2018/12/18 16:41  USR
_  COMMLFR   Line Received blksize per block   2018/12/18 16:41  USR
_  COMMLFT   Line Transmitted blksize per blk  2018/12/18 16:41  USR
_  DDIWELAP  Elapsed Time per IWAIT Analysis   2018/12/18 16:41  USR
_  ELAPCAL   Elapsed Time per Call             2018/12/18 16:41  USR
_  ELAPIWT   Elapsed Time per IWAIT            2018/12/18 16:41  USR
_  ELAPSCH   Elapsed Time per Schedule         2018/12/18 16:41  USR
_  FPBGELP   FP BALG Queue Time per Message    2018/12/18 16:41  USR
_  FPBGQLN   FP BALG Queue Length per Message  2018/12/18 16:41  USR
_  FPBSCNT   FP Buffer Statistics              2018/12/18 16:41  USR
_  FPOTACT   FP OTHREAD - Active counts        2018/12/18 16:41  USR
_  FPOTBOQ   FP OTHREAD - Buffers on Queue     2018/12/18 16:41  USR
_  FPOTWTA   FP OTHREAD - Waiting Area         2018/12/18 16:41  USR
_  FPRCLIW   FP Lock IWAIT Elapsed time        2018/12/18 16:41  USR
_  IWTSCAL   IWAITs per Call                   2018/12/18 16:41  USR
_  IWTSUMMY  Elapsed Time per System IWAIT     2018/12/18 16:41  USR
_  LOGIN     Transit Time Statistics           2018/12/18 16:41  USR
_  MSCQELP   MSC Queue time per message        2018/12/18 16:41  USR
_  MSCQLEN   MSC Queue length per message      2018/12/18 16:41  USR
_  SYSCKPT   Checkpoint Duration               2018/12/18 16:41  USR
******************************* Bottom of data ********************************
```

Figure 45. Distributions: samples

2. Type NEW on the command line to create a new Distribution. Let's model this Distribution on one of the samples.
3. On the New Distribution panel enter a name for the new Distribution. Let's call it WAITANA and let's model it on the DDIWELAP sample Distribution.

```
                        New Distribution

Specify the name of the new Distribution and optional model.

Name  . . . . WAITANA

Default or MODEL  . . . . 2  1. Default
                             2. MODEL (specified below)

Model  DDIWELAP

Press Enter to create the Distribution.
Press Exit or Cancel to cancel the request.
```

Figure 46. New Distribution

4. Press Enter to create the Distribution. The Edit Distribution panel is displayed with all of the fields set to the values specified in the Distribution we used as a model.

   Set the limit values from 1 through 10 and set the multiplier to 10. This will allow us to explore the distribution at the low end of the range.

```
  File  Options  Help
_______________________________________________________________________________
                        EDIT Distribution - WAITANA
Command ===> _________________________________________________________________

Specify distribution options.

Description  . . . . Database IWAIT Analysis

Limit Values . . . . . .       (1) 1        (2) 2        (3) 3
                               (4) 4        (5) 5        (6) 7
                               (7) 8        (8) 9        (9) 10

Limit Values Title . . . . . . Sc Mil Mic
Limit Value Multiplier . . . . 1000
Limit Value Edit Mask  . . . . ZZZ.ZZ9.999
```

Figure 47. Edit Distribution

5. Type SAVE on the command line to save your Distribution, and press **Exit** (**F3**) to return to the IMS PA primary option menu.
6. Select option 3 **Report Sets** and enter line action **S** next to SAMPMON. This is the sample Monitor Report Set supplied with IMS PA.
7. Tab to the **Region Activity Analysis Reports** category and enter line action **S** next to the **Database IWAIT Analysis** report to select it.
8. Select the **Print Distributions** option, and specify WAITANA as the distribution for the Elapsed Time per IWAIT graph.

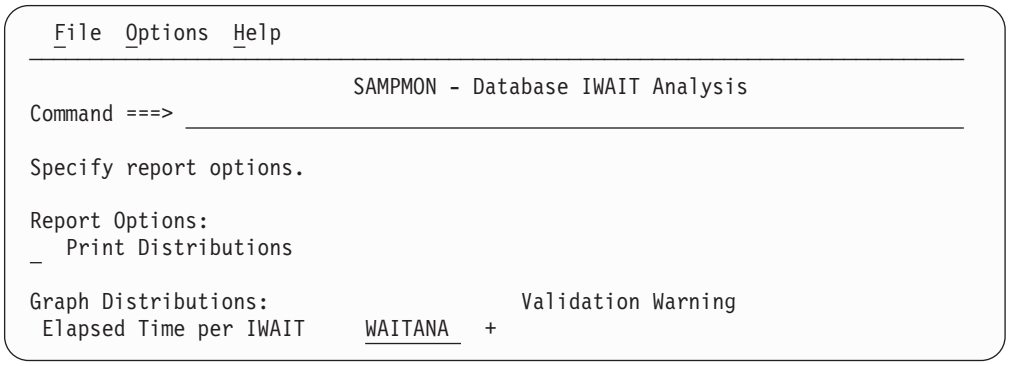


Figure 48. Database IWAIT Analysis

9. Run the report and submit the JCL.
10. Press **Exit** (**F3**) and return to the IMS PA primary option menu.

The Database IWAIT Analysis report produces IWAIT distribution graphs and IWAIT activity analysis by DDname and DDname Group for each dependent region. Scroll to the bottom of the report to view your graphs and consider this:

Can you identify any inefficient seek patterns? Hint: look for widely dispersed times and long elapsed times accompanied by a large standard deviation.

For further information on interpreting the report output, see "Database IWAIT Analysis report" in the IMS Performance Analyzer *Report Reference*.

Investigating contention issues

In this section we will construct a new Monitor Report Set that is designed to investigate contention issues.

Procedure

1. Select option 3 **Report Sets** from the IMS PA primary option menu. The Report Sets panel is displayed.
2. Type NEW on the command line and press Enter. The New Report Set panel is displayed.
3. Enter the name for your new Report Set. Let's call it `CONTENTM`.
4. Select **Type** 2 to create a Monitor Report Set and press Enter.
5. Enter a suitable description for the Report Set, such as "Contention Monitor reports".
6. Tab to the **Options** category and enter line action **S** next to **Monitor Global**.

   This is where you can establish some general options for the reports in this Report Set. Select **Include Distributions in Reports** because we want all of our reports to include the distributions we have specified. Note the report output DDnames; you will need to refer to these later to read your reports. When you have finished, press **Exit** (**F3**) to return to the Report Set.
7. Select the **Alternate Sequencing** option.

   Here we can specify a different ordering for some of our reports. For the **Required Sequence**, specify option 4 **Delay**. This orders the columns by time spent by the resource waiting for IWAIT events to complete. For example, the databases which had to wait the longest for I/O to complete. Press **Exit** (**F3**) to return to the Report Set.

   Let's now activate our reports.

8. Enter line action **A** next to the following reports: Region Summary, Performance Exceptions, Enqueue/Dequeue Trace, and DEDB Resource Contention.

   Note: The Alternate Sequencing option specified in step 7 on page 105 applies only to the Region Summary report and the DEDB Resource Contention report.
9. Next, you may wish to specify some report options. Enter line action **S** next to the activated reports to select any specific options you wish to set. Note that the Region Summary report does not contain any options.
10. When you have finished specifying your report options, return to the Report Set and type SAVE on the command line to save your settings.
11. Type RUN on the command line to run your reports. The Run Report Set options panel displays.
12. Enter the name of your IMS system that contains monitor files. You can use **Prompt** (**F4**) to select from a pick list.
13. For **Execution Mode**, you can select option 1 to simply submit your job without viewing the JCL, or if you wish you can edit the JCL before you submit the job.
14. When you have submitted your Report Set, press **Exit** (**F3**) and return to the Primary Option Menu.

Our Report Set generates four reports:
- SUMMRPT contains the Region Summary and Region Detail reports and the Region Distributions.
- EXCPTRPT contains the Exception Listing.
- ENQDD contains the Enqueue-Dequeue Summary.
- FPRSCONT contains the Fast Path DEDB Resource Contention Summary and the Fast Path DEDB Lock Analysis.

View the reports and consider these questions: Is there any I/O data set contention? Which storage pools failed, how many times did they fail, and how much storage did they need? Were there any enqueue conflicts? Which area had the longest average DEDB lock wait time?

For further information on interpreting the report output, see “Region Summary Report”, “Performance Exception Report”, “Enqueue/Dequeue Trace Report”, and “Fast Path DEDB Resource Contention Report” in the IMS Performance Analyzer *Report Reference*.

This is the end of the third session of the tour.

Session 4: Creating IMS Connect reports

This session shows you how to define an Object List and run IMS Connect reports.

About this task

Prerequisite: To complete this session, you must have specified your IMS Connect Extensions definitions data set in “Session 1: Setting up your environment” on page 80.

Defining an Object List for transit reporting

An Object List is a reusable set or range of values that you can use as selection criteria for transit reporting.

Procedure

1. From the IMS PA primary option menu, select option 6 **Object Lists**.
2. Type NEW on the command line to create a new Object List.
   The New Object List panel is displayed.

```
                              New Object List

Specify the name of the new Object List and the type or model.

Name  . . . . TCP3000

List Type or MODEL
25  1.  Application Group   11. Line                21. User ID
    2.  Block ID            12. Line/Terminal       22. User-Defined
    3.  Class               13. LTERM               23. VTAM Node
    4.  Database            14. Message ID
    5.  DDname              15. Program Name        24. Connect Client ID
    6.  DDname Group        16. Record Code         25. TCP/IP Port
    7.  DEDB Area           17. Region ID by PST    26. Tpipe
    8.  External SSID       18. Region Jobname
    9.  IMS Subsystem ID    19. Routing Code        27. MODEL (see below)
    10. Key                 20. Transaction Code

Model . . . . ____________________________________________________

Press Enter to create the Object List, Exit or Cancel to leave.
```

Figure 49. New Object List

   Let's define an Object List to specify only port numbers ranging from 3000 to 3999.

3. In the New Object List panel, type the name for your Object List. For example, TCP3000.
4. Specify Type 25 (TCP/IP Port), and then press Enter.
   The Edit Object List panel is displayed.

```
  File  Edit  Options  Help
_______________________________________________________________________________
                  EDIT PORT Object List - TCP3000            Row 1 to 1 of 1
Command ===> SAVE                                          Scroll ===> PAGE

Specify the TCP/IP Port values.

Description  . . . . TCP/IP Ports 3000-3999

Enter "/" to select action.

              - Range (or sublist) -
     Sublist  From:        To:            Validation Warning
_         _   3000        3999
****************************** Bottom of data ********************************
```

Figure 50. Edit Object List

5. Enter a description for this object. For example, “TCP/IP Ports 3000–3999”.
6. Enter 3000 in the **Range From** field and enter 3999 in the **Range To** field.
7. Type SAVE on the command line to save the list. Press **Exit** (**F3**) and return to the IMS PA primary option menu.

8. Select option 3 **Report Sets**.
9. On the command line, enter NEW SAMPCEX.
10. Select **IMS Connect** in the **Type** field.
11. Press Enter to create the report set.
12. In the **Transaction Transit Reports** category, enter line action **S** next to the **Log** report. The Transit Log report is displayed.
13. In the Selection Criteria for **Transaction Code**, exclude the object PART. This excludes all transaction codes named “PART”.

```
  File  Options  Help
────────────────────────────────────────────────────────────────────────────────
                         SAMPCEX - Transit Log
Command ===> ____________________________________________________________________

Specify report options.

Report Options:                         Report Output DDname  LOG
/  Additional identification

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       EXC    PART       _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 TCP/IP Port Number     INC    TCP3000    /
```

Figure 51. Communication report

14. In the TCP/IP Port Number Selection Criteria, include the Object List TCP3000. You can do this by positioning the cursor on the **Object** field and pressing **Prompt** (**F4**). Select the Object List from the pick list and press Enter. Using the Prompt key automatically fills in the rest of the columns.
15. Type RUN on the command line, specify your Connect system, and enter an appropriate report interval. Press Enter and submit your JCL.
16. Press **Exit** (**F3**) and return to the IMS PA primary option menu.

The IMS Connect Transit Log provides performance details about every transaction processed by IMS Connect. View the report and consider this question:

What are the performance details of transactions processed through port 3000?

For further information on interpreting the report output, see “Connect Transit Log Report” in the IMS Performance Analyzer *Report Reference*.

Investigating IMS Connect resource usage

This session shows you how to create a Report Set that is designed to investigate IMS Connect resource usage.

Procedure

1. From the IMS PA primary option menu, select option 3 **Report Sets**.
2. Type NEW on the command line. Create a new Report Set named CONRESRC of type IMS Connect and press Enter.
3. Enter an appropriate description for the Report Set, such as “Connect resource tracking”.

4. Use line action **A** to activate the following reports: Port Usage, ACK/NAK, and Transit Event Trace.
5. If you wish, specify some report options by entering line action **S** next to the active reports.
6. Type SAVE on the command line to save the Report Set.

   You can run the Report Set in the typical manner from the Report Sets list, but let's try a different method this time.
7. Press **Exit** (**F3**) and return to the IMS PA primary option menu.
8. Select option 9 **IMS Connect**. The IMS Connect System Definition panel is displayed, listing all your systems in the IMS Connect Extensions data set you specified in session 1 using option 0.5 **IMS Connect Extensions Definitions Data Set**.
9. Type line action RUN next to any system in your list. The Run Connect Report Set panel is displayed.
10. Position your cursor on the **Report Set** field and press **Prompt** (**F4**). A pick list of your Connect Report Sets appears. Select CONRESRC from the list and press Enter.
11. Submit your JCL and press **Exit** (**F3**) to return to the IMS PA primary option menu.

The IMS Connect Port Usage Report provides a summary of the TCP/IP ports used by the IMS Connect system. The IMS Connect ACK/NAK Report provides a summary of acknowledgement activity for transactions that use Sync Level=CONFIRM. The IMS Connect Trace provides a list of detailed information about every event in the life of a transaction.

View the reports and consider these questions:

- What TCP/IP ports were used by the IMS Connect system?
- What acknowledgement activity occurred for each transaction?
- What other events occurred during the life of a particular transaction?

For further information on interpreting the report output, see “Port Usage Report”, “Connect ACK/NAK Report”, and “Connect Trace Report” in the IMS Performance Analyzer *Report Reference*.

This is the end of the fourth session of the tour.

Session 5: Using Report Forms

This session shows you how to create Report Forms and run sets of IMS Connect reports.

About this task

Prerequisite: To complete this session, you must have specified your IMS Connect Extensions definitions data set in “Session 1: Setting up your environment” on page 80.

Creating List and Summary Report Forms

In this part of the tour, we will create a List Report Form that contains only IMS Connect fields, a Summary Report Form that contains only IMS fields, and a Summary Report Form that contains both IMS and IMS Connect fields. These Report Forms will be defined in a new Report Set that we will create later in the tour.

About this task

Report Forms allow you to personalize the format and content of Transaction Transit reports and extracts to include only the information that interests you. For a complete list of fields that can be used in a Report Form, see Chapter 41, "Glossary of Report Form field names," on page 777.

Procedure

1. Select option 10 **Report Forms** from the IMS PA primary option menu. The Report Forms panel is displayed.

```
  File  View  Samples  Options  Help
-------------------------------------------------------------------------------
                                Report Forms                Data set is empty
Command ===> NEW                                             Scroll ===> PAGE

Report Forms Data Set  . . : USER.IMSPA.FORM

/   Name    Type              Description                Changed        ID
****************************** Bottom of data ********************************
```

Figure 52. Report Forms

2. Type NEW on the command line and press Enter to create a new Report Form.

   The New Report Form panel is displayed.

   The first Report Form that we define will be a List form that will contain only IMS Connect fields.
3. Let's give the new Report Form a **Name** of LISTCONN.
4. Specify a form **Type** of 1 (**List**).
5. Enter / next to **Include Connect fields** for the List or Summary options.

```
                            New Report Form

Specify new Report Form options.

Name . . LISTCONN

Type . . 1  1. List
            2. Summary
            3. Model

List or Summary options:
   Include IMS fields
/  Include Connect fields          Enter "/" to select
_  Include OMEGAMON TRF fields     _  Specify Field Categories

Model options:
 Model Report Form  . . ________ +
 Report Forms Data Set  'USER.IMSPA.FORM'                              +

Press Enter to create the Report Form.
Press Exit or Cancel to cancel the request.
```

Figure 53. New Report Form

6. Press Enter to display the default List Report Form containing only IMS Connect fields.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
EDIT                    List Report Form - LISTCONN          Row 1 to 52 of 60
Command ===> ____________________________________________________ Scroll ===> PAGE

Description . . . Connect Transit Log                Page Width . . . 132
                                                     Precision  . . . 3
                                                     Digit Grouping   NO

   Field
/  Name +   Func  Len  Description
__ STARTCON TIME   12  Connect transaction start time
__ TRANCODE _____   8  Transaction Code
__ TARGDS   _____   8  Target datastore
__ PORT     _____   5  TCP/IP Port number
__ RESPCON  _____   8  Connect response time
__ PREOTMA  _____   8  Total pre-OTMA input time
__ INREAD   _____   8  Input read Socket time
__ READEXIT _____   8  Read message Exit time
__ SAFTIME  _____   8  SAF security call time
__ PROCOTMA _____   8  OTMA processing time
__ CONFIRM  _____   8  Client Confirm time
__ POSTOTMA _____   8  Total post-OTMA output time
__ XMITEXIT _____   8  Transmit message Exit time
__ FAILED   _____   8  Transaction failure indicator
__ EOR      _____      ----------------- End of Report ------------------
__ EOX      _____      ----------------- End of Extract -----------------
__ ACKREAD  _____   8  Acknowledgement read socket time
__ CLIACK   _____   4  Client acknowledgement indicator
__ CLIENTID _____   8  Client ID
__ COMMITMD _____   6  Commit mode
__ COMPLVLC _____   5  Connect Completion Level
__ CONFIRM  _____   8  Client Confirm time
__ CONFOTMA _____   8  OTMA ACK processing time
__ CONNLTOK _____  16  Connect Logon token
__ CONNOTOK _____  16  Connect Resume-Tpipe Orig Message logon token
__ DLAYOTMA _____   8  OTMA delay time
__ EXITNAME _____   8  Connect user message exit name
__ FAILED   _____   8  Transaction failure indicator
__ HWSID    _____   8  Connect system name
__ IMSACK   _____   3  IMS acknowledgement indicator
__ INREAD   _____   8  Input read Socket time
__ IPADDR   _____  39  IP Address
__ LTERMOVR _____   8  Override LTERM
__ ORIGDS   _____   8  Original datastore
__ OUTRTCON _____   8  Connect Resume-Tpipe time
__ PORT     _____   5  TCP/IP Port number
__ PORTDEP  _____   8  Port depth
__ PORTTYPE _____   4  Port type
__ POSTOTMA _____   8  Total post-OTMA output time
__ PREOTMA  _____   8  Total pre-OTMA input time
__ PROCOTMA _____   8  OTMA processing time
__ READEXIT _____   8  Read message Exit time
__ REJECT   _____   3  Transaction rejected indicator
__ REROUTNM _____   8  Connect Reroute name
__ RESPCON  _____   8  Connect response time
__ RESUMETP _____   5  Resume Tpipe indicator
__ RXMLEXIT _____   8  XML Adapter message Exit time
__ SAFTIME  _____   8  SAF security call time
__ SOCKET   _____   5  Socket number
__ STARTCON TIME   12  Connect transaction start time
__ SYNCLEV  _____   7  Synchronization level
__ TARGDS   _____   8  Target datastore
__ _______ _____
```

Figure 54. List Report Form (Connect fields)

7. Press **Exit** (**F3**) to save the default list form and return to the Report Forms selection panel.

   The second Report Form that we are going to define will be a Summary form that will contain only IMS fields.
8. On the command line of the Report Forms panel type NEW and press Enter to create a new Report Form.
9. Let's give this Report Form a **Name** of SUMMIMS.
10. Specify a form **Type** of 2 (**Summary**).
11. Enter / next to **Include IMS fields** for the List or Summary options. Ensure that the other options are not selected.
12. Press Enter to display the default Summary Report Form containing only IMS fields.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
EDIT                    Summary Report Form - SUMMIMS    Row 1 of 195 More: < >
Command ===> ____________________________________________________ Scroll ===> PAGE

Description . . . Transaction Resource Usage        Page Width . . . 132
                                                    Precision  . . . 3
                                                    Digit Grouping   NO

   Field    Sort
/  Name +   K  O Func  Len Description
__ TRANCODE K  A _____   8 Transaction Code
__ TRANCNT     _ _____   8 Transaction count
__ INPUTQ      _ AVE     8 Input queue time
__ PROCESS     _ AVE     8 Processing time
__ OUTPUTQ     _ AVE     8 Output queue time
__ TOTALTM     _ AVE     8 Total transaction elapsed time
__ INPUTQ      _ 90      8 Input queue time
__ PROCESS     _ 90      8 Processing time
__ OUTPUTQ     _ 90      8 Output queue time
__ TOTALTM     _ 90      8 Total transaction elapsed time
__ CPUTIME     _ AVE     8 CPU time
__ DBCALLS     _ AVE     8 DB call count
__ DBWAITS     _ AVE     8 DB wait count
__ DCCALLS     _ AVE     8 DC call count
__ EOR         _ _____     ----------------- End of Report ------------------
__ EOX         _ _____     ----------------- End of Extract -----------------
__ ABENDCNT    _ _____   8 Abend count
__ APPC     K  * _____   4 APPC indicator
__ APPLNAME K  * _____   8 Application grouping name
__ BMPCHKPT    _ _____   8 BMP Checkpoint count
__ BMPSYNCP    _ _____   8 BMP Syncpoint count
__ CICSAPPL K  * _____   8 CICS Applid
__ CLASS    K  * _____   3 Transaction Class
__ CM0DELAY    _ _____   8 OTMA CM0 (Commit-Then-Send) client ack time
__ CM1DELAY    _ _____   8 OTMA CM1 (Send-Then-Commit) delay time
__ COMMITMD K  * _____   6 Commit mode
__ COMPCODE K  * _____   8 Completion Code
__ COMPLVL  K  * _____   5 IMS Completion Level
__ CONVERS  K  * _____   4 Conversational transaction indicator
__ CPUSU       _ _____   8 CPU Service Units
__ CPUTIME     _ _____   8 CPU time
__ CPUZAAP     _ _____   8 zAAP/zIIP execution time
__ DATABASE K  * _____   8 Database DBD name
__ DBACMETH K  * _____   4 Database Access Method
__ DBBLKDEL    _ _____   8 Database block deletes
__ DBBLKINS    _ _____   8 Database block inserts
__ DBBLKREP    _ _____   8 Database block replaces
__ DBBLKUPD    _ _____   8 Database block updates
__ DBCALLS     _ _____   8 DB call count
__ DBCTLPRE    _ _____   8 DBCTL Delay
__ DBDLET      _ _____   8 DB DLET call count
__ DBGETS      _ _____   8 DB get call count
__ DBGHN       _ _____   8 DB GHN call count
__ DBGHNP      _ _____   8 DB GHNP call count
__ DBGHU       _ _____   8 DB GHU call count
__ DBGN        _ _____   8 DB GN call count
__ DBGNP       _ _____   8 DB GNP call count
__ DBGNS       _ _____   8 DB GN + GNP + GHN + GHNP call count
__ DBGU        _ _____   8 DB GU call count
__ DBGUS       _ _____   8 DB GUx call count
__ DBIOCALL    _ _____   8 Total OSAM and VSAM database IO count
__ DBIOTIME    _ _____   8 Database IO elapsed time
```

Figure 55. Summary Report Form (IMS fields)

13. Press **Exit** (**F3**) to save the default summary form and return to the Report Forms selection panel.

    The final Report Form that we are going to define will be a Summary form that will contain both IMS and IMS Connect fields.
14. On the command line of the Report Forms panel type NEW and press Enter to create a new Report Form.
15. Let's give this Report Form a **Name** of SUMMCOMB.
16. Specify a form **Type** of 2 (**Summary**).
17. Enter / next to both **Include IMS fields** and **Include Connect fields** for the List or Summary options.
18. Press Enter to display the default Summary Report Form containing both IMS and IMS Connect fields.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
EDIT                    Summary Report Form - SUMMCOMB   Row 1 of 228 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

Description . . . Connect Analysis by TranCode     Page Width . . . 132
                                                   Precision  . . . 3
                                                   Digit Grouping   NO

   Field    Sort
/  Name +   K  O Func  Len Description
__ TRANCODE K  A _____   8 Transaction Code
__ STARTCON K  * TIME      Connect transaction start time
__ TRANCNT     _ _____   8 Transaction count
__ RESPCON     _ AVE     8 Connect response time
__ PREOTMA     _ AVE     8 Total pre-OTMA input time
__ INREAD      _ AVE     8 Input read Socket time
__ READEXIT    _ AVE     8 Read message Exit time
__ SAFTIME     _ AVE     8 SAF security call time
__ PROCOTMA    _ AVE     8 OTMA processing time
__ CONFIRM     _ AVE     8 Client Confirm time
__ POSTOTMA    _ AVE     8 Total post-OTMA output time
__ XMITEXIT    _ AVE     8 Transmit message Exit time
__ EOR         _ _____     ----------------- End of Report -----------------
__ EOX         _ _____     ----------------- End of Extract -----------------
__ ABENDCNT    _ _____   8 Abend count
__ ACKREAD     _ _____   8 Acknowledgement read socket time
__ APPC     K  * _____   4 APPC indicator
__ APPLNAME K  * _____   8 Application grouping name
__ BMPCHKPT    _ _____   8 BMP Checkpoint count
__ BMPSYNCP    _ _____   8 BMP Syncpoint count
__ CICSAPPL K  * _____   8 CICS Applid
__ CLASS    K  * _____   3 Transaction Class
__ CLIACK   K  * _____   4 Client acknowledgement indicator
__ CLIENTID K  * _____   8 Client ID
__ CM0DELAY    _ _____   8 OTMA CM0 (Commit-Then-Send) client ack time
__ CM1DELAY    _ _____   8 OTMA CM1 (Send-Then-Commit) delay time
__ COMMITMD K  * _____   6 Commit mode
__ COMPCODE K  * _____   8 Completion Code
__ COMPLVL  K  * _____   5 IMS Completion Level
__ COMPLVLC K  * _____   5 Connect Completion Level
__ CONFIRM     _ _____   8 Client Confirm time
__ CONFOTMA    _ _____   8 OTMA ACK processing time
__ CONVERS  K  * _____   4 Conversational transaction indicator
__ CPUSU       _ _____   8 CPU Service Units
__ CPUTIME     _ _____   8 CPU time
__ CPUZAAP     _ _____   8 zAAP/zIIP execution time
__ DATABASE K  * _____   8 Database DBD name
__ DBACMETH K  * _____   4 Database Access Method
__ DBBLKDEL    _ _____   8 Database block deletes
__ DBBLKINS    _ _____   8 Database block inserts
__ DBBLKREP    _ _____   8 Database block replaces
__ DBBLKUPD    _ _____   8 Database block updates
__ DBCALLS     _ _____   8 DB call count
__ DBCTLPRE    _ _____   8 DBCTL Delay
__ DBDLET      _ _____   8 DB DLET call count
__ DBGETS      _ _____   8 DB get call count
__ DBGHN       _ _____   8 DB GHN call count
__ DBGHNP      _ _____   8 DB GHNP call count
__ DBGHU       _ _____   8 DB GHU call count
__ DBGN        _ _____   8 DB GN call count
__ DBGNP       _ _____   8 DB GNP call count
__ DBGNS       _ _____   8 DB GN + GNP + GHN + GHNP call count
__ _________   _ _____
```

Figure 56. Summary Report Form (IMS and IMS Connect fields)

19. Press **Exit** (**F3**) twice to save the default summary form and return to the IMS PA primary option menu.

Creating a Report Set that uses List and Summary Report Forms

Let's use the Report Forms we have just created to define a new Report Set.

Procedure

1. Select option 3 **Report Sets** from the IMS PA primary option menu. The Report Sets panel is displayed.

```
  File  View  Options  Help
------------------------------------------------------------------------------
                                Report Sets                     Row 1 to 2 of 2
Command ===> NEW                                                Scroll ===> PAGE

Report Sets Data Set . . . : USER.IMSPA.RSET

/     Name    Type           Description                Changed        ID
___  SAMPLOG  LOG  Sample Log Report Set            2014/06/25 17:42 USER
___  SAMPMON  MON  Sample Monitor Report Set        2014/06/25 17:42 USER
****************************** Bottom of data ********************************
```

Figure 57. Report Sets

2. Enter NEW on the command line to define a new Report Set. The New Report Set window appears.

   We will use the Report Set we are about to create to report both IMS and IMS Connect fields.

```
                         New Report Set

Specify the name of the new Report Set and the type or model.

Name . . . IMSCONN

Type . . . 3  1. Log
              2. Monitor
              3. IMS Connect (includes combined)
              4. OMEGAMON TRF
              5. OMEGAMON ATF
              6. MODEL (specified below)

Model  ________________________________________________________

Press Enter to create the Report Set.
Press Exit or Cancel to cancel the request.
```

Figure 58. New Report Set

3. Give the new Report Set a **Name** of IMSCONN.
4. Specify a set **Type** of 3 (**IMS Connect**).
5. Press Enter to create the Report Set. Note that the New Report Set window can by bypassed by entering the NEW command with the desired name and type parameters in the Report Sets panel (e.g. NEW IMSCONN CEX).

6. The Report Set edit panel appears. Enter line action **S** next to **List** in the **Transaction Transit Reports (Form-based)** category.

```
  File  View  SysDefs  Options  Help
──────────────────────────────────────────────────────────────────────────────
EDIT                      Report Set - IMSCONN                    Line 1 of 18
Command ===> ________________________________________________ Scroll ===> PAGE

Description . . . IMS PA Report Set

Enter "/" to select action.

___          ** Reports **                         Active
     -  ___  Options                                 No
             ___  Connect Global                     No
     -  ___  Transaction Transit Reports             No
             ___  Analysis                           No
             ___  Log                                No
             ___  Extract                            No
     -  ___  Transaction Transit Reports (Form-based)  No
             S__  List                               No
             ___  Summary                            No
             ___  Transaction Index                  No
     -  ___  Resource Usage Reports                  No
             ___  Port Usage                         No
             ___  Resume Tpipe                       No
             ___  ACK/NAK                            No
             ___  Exception Events                   No
             ___  Gap Analysis                       No
     -  ___  Trace Reports                           No
             ___  Transit Event Trace                No
             ** End of Reports **
```

Figure 59. Combined Report Set

7. Tab to line 1 in the **Reports Required** section. In the **Form** field press **Prompt** (**F4**) and select `LISTCONN`.

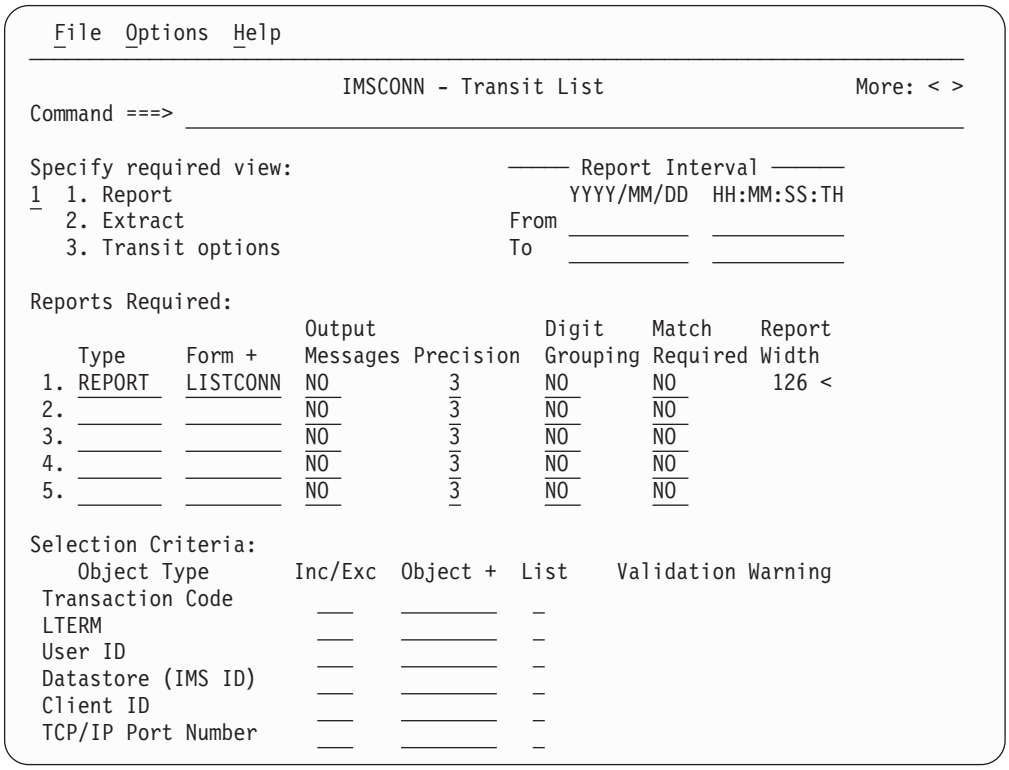


Figure 60. Transit List (Report options)

8. Press **Exit** (**F3**) to save the Transit List definition.
9. Enter line action **S** next to **Summary** in the **Transaction Transit Reports (Form-based)** category.
10. Tab to line 1 in the **Reports Required** section. In the **Form** field press **Prompt** (**F4**) and select SUMMIMS.

```
                        IMSCONN - Transit Summary                  More: < >
Command ===> ____________________________________________________________________

Specify required view:                  ------ Report Interval ------
1  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ____________
   3. Transit options                   To   __________  ____________

Reports Required:
                        Time     Totals Precision  Digit    Match    Report
    Type     Form +     Interval Level  Time Count Grouping Required Width
 1. REPORT   SUMMIMS    00:01:00   0     3     0   NO       NO        125 <
 2. ________ ________   00:01:00   0     3     0   NO       NO
 3. ________ ________   00:01:00   0     3     0   NO       NO
 4. ________ ________   00:01:00   0     3     0   NO       NO
 5. ________ ________   00:01:00   0     3     0   NO       NO

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 LTERM                  ___    ________   _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 TCP/IP Port Number     ___    ________   _
```

Figure 61. Transit Summary (Report options)

11. On the second line of the **Report Required** section, type `EXTRACT` in the **Type** field and press Enter. In the **Form** field press **Prompt** (**F4**) and select `SUMMCOMB`.
12. In the **Extract Data Set Name** field, enter the name for the extract data set (for example, `'IMSPA.SUMMARY.EXTRACT'`. In the **Disp** (disposition) field, type `OLD`.

    Note: If the data set has not already been cataloged, IMS PA automatically catalogs it for you.

```
                        IMSCONN - Transit Summary                  More: < >
Command ===> ____________________________________________________________________

Specify required view:                  ------ Report Interval ------
2  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ____________
   3. Transit options                   To   __________  ____________

Extract Data Sets:

    Type     Form +    Extract Data Set Name                          Disp
 1. REPORT   SUMMIMS   ____________________________________________   ___
 2. EXTRACT  SUMMCOMB  'IMSPA.SUMMARY.EXTRACT'                        OLD
 3. ________ ________  ____________________________________________   ___
 4. ________ ________  ____________________________________________   ___
 5. ________ ________  ____________________________________________   ___

Extract Options:
/  Include Delimiter                  Delimiter . . ,  (blank is valid)
/  Include Field Labels
_  Numeric Fields in Float Format
```

Figure 62. Transit Summary (Extract options)

13. Press **Exit** (**F3**) to save the changes to the Report Set and return to the Report Set panel.

    Notice the column heading **Active**. When you create a new Report Set, the status of all reports is initially set to **No**. Because the report options for the Transaction Transit List and Summary reports have been changed, they now have an Active status of **Yes**.

14. Press **Exit** (**F3**) to return to the Report Sets selection panel.

    We will now run the Report Set to produce the List and Summary report and the Summary Extract file.

15. Enter line action **RUN** next to the **IMSCONN** Report Set in the **Reports Sets** panel.

```
  File  View  Options  Help
──────────────────────────────────────────────────────────────────────────────
                                Report Sets              Member IMSCONN saved
Command ===> ____________________________________________ Scroll ===> PAGE

Report Sets Data Set . . . : USER.IMSPA.RSET

/     Name    Type           Description               Changed        ID
RUN  IMSCONN  CEX  IMS PA Report Set               2014/07/15 10:48 USER
___   SAMPLOG  LOG  Sample Log Report Set          2014/06/25 14:22 USER
___   SAMPMON  MON  Sample Monitor Report Set      2014/06/25 14:22 USER
****************************** Bottom of data ********************************
```

Figure 63. Selecting a Report Set to run

16. Prior to the generation of the Report Set JCL, the Run Connect Report Set panel appears (unless you choose to bypass it). This panel prompts you to check or change your runtime options before IMS PA generates the JCL to run your report.

```
  File  SysDefs  Options  Help
──────────────────────────────────────────────────────────────────────────────
                        Run Report Set IMSCONN
Command ===> ____________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                        ──── Report Interval ──────
 System or Group . . PR01      +              YYYY/MM/DD  HH:MM:SS:TH
                                         From 2013/06/01  00:00:00:00
                                         To   2014/01/01  00:00:00:00

File Selection Options:                  Unresolved Data Set Options:
2  1. Use specified journal files        2  1. Issue error message
   2. Automated file selection              2. Edit unresolved JCL

Execution Mode:                          Enter "/" to select option
3  1. Submit Report Set                  _  Bypass run-time options prompt
   2. Edit JCL before submit
   3. Edit JCL with command input
```

Figure 64. Run Connect Report Set

System Selection specifies the IMS Connect **System or Group** you wish to report against. You can type in the system name directly, for example PR01, or you can press **Prompt** (**F4**) to select a system from a prompt list.

Report Interval specifies the time period that you wish to report against.

Additional runtime options include:

- **File Selection Options** to request that IMS PA uses automated file selection to locate the relevant data sets for the specified **System** and **Report Interval**.
- **Execution Mode** to request that IMS PA generate JCL with command input.

Enter your desired run options and press Enter to generate the Report Set JCL. If required the JCL can be edited prior to submission.

17. Type SUB on the command line to submit the JCL.

The reports are stored in the DDname you specified in the IMSCONN Report Set.

The Connect Transit Log list report will be stored in LIST0001 and the IMS Transaction Resource Usage summary report will be stored in SUMM0001.

To display the contents of the Connect Analysis by TranCode combined summary extract, use the Data Set List utility. The extract data set name specified in the IMSCONN Report Set for the guided tour was 'IMSPA.SUMMARY.EXTRACT'.

This is the end of the tour.

Chapter 7. Report Sets

A Report Set contains a series of report requests. You can choose to run any number and combination of IMS PA reports in a single Report Set in a single job and single pass of the input data files.

Log reports that process IMS Log data run in a Log Report Set (type LOG), separate from monitor reports that process IMS Monitor or DB Monitor data which run in a Monitor Report Set (type MON). Likewise, Connect reports that process IMS Connect data, optionally combined with IMS Log data, run in a separate Connect Report Set (type CEX), while reports that process OMEGAMON TRF run in a fourth type of Report Set (type TRF), and OMEGAMON ATF in a fifth (type ATF). The different types of Report Set (LOG, MON, CEX, TRF, ATF) can coexist in the same Report Sets data set, but are specified and run separately.

When you submit a Report Set for batch processing, IMS PA generates a one-step JCL deck to run the report requests.

To invoke the Report Sets facility, select option 3 **Report Sets** from the IMS PA primary option menu.

For detailed information on requesting reports and specifying report options, see:

- Chapter 20, “Requesting Log reports,” on page 287
- Chapter 22, “Requesting Monitor reports,” on page 491
- Chapter 24, “Requesting IMS Connect reports,” on page 567
- Chapter 26, “Requesting OMEGAMON TRF reports,” on page 627
- Chapter 28, “Requesting OMEGAMON ATF reports,” on page 659

How to use the Report Sets dialog

If this is the first time you have invoked Report Sets in IMS PA V4R4, you may be prompted with an upgrade message to alert you to the structure of the Report Set menu and the recommended way to operate the dialog.

Report Set menu tree

The report Tree Structure is a hierarchical representation of report categories and reports; similar to the way some PC tools display folders and their contents.

Report categories act as folders that can expand (to show) and collapse (to hide) the reports contained within them. The **+** or **-** character to the left of each report category shows its current display status, expanded (**-**) or collapsed (**+**). This allows you to view only the reports that you are currently interested in.

Use your mouse or line action **S** against a report category to toggle the expand/collapse status of the category.

You can also enter line action **S** at the top of the Reports tree. This will expand all categories that are not already expanded. If all categories are expanded, then it will collapse all categories.

The example in Figure 65 shows the Resource Usage & Availability Reports category expanded and all other categories collapsed.

```
EDIT                      Report Set - SAMPLOG                    Line 1 of 24
Command ===> _____________________________________________ Scroll ===> PAGE

Description . . . Sample log report set

Enter "/" to select action.

___            ** Reports **                              Active
     +  ___    Options                                      Yes
     +  ___    Transaction Transit Reports                  Yes
     +  ___    Transaction Transit Reports (Form-based)     No
     -  ___    Resource Usage & Availability Reports        Yes
           ___    Dashboard                                 Yes
           ___    Management Exception                      Yes
           ___    Transaction Resource Usage                No
           ___    Resource Availability                     Yes
           ___    CPU Usage                                 Yes
           ___    Internal Resource Usage                   Yes
           ___    MSC Link Statistics                       No
           ___    Message Queue Utilization                 No
           ___    Database Update Activity                  Yes
           ___    Region Histogram                          No
           ___    OSAM Sequential Buffering                 No
           ___    Deadlock                                  Yes
           ___    System Checkpoint                         Yes
           ___    BMP Checkpoint                            No
           ___    Gap Analysis                              No
           ___    Cold Start Analysis                       No
     +  ___    Fast Path Transit Reports                    No
     +  ___    Fast Path Resource Usage Reports             No
     +  ___    ATF Enhanced Summary Reports                 No
     +  ___    Trace Reports                                No
        ___    User-Written Reports                         No
        ___    ** End of Reports **
```

Figure 65. Report Set menu tree

Activating reports

An **Active** status indicator is displayed to the right of each report category and report. Simply change the **Active** status to `Yes` to ensure the report is run.

About this task

Report categories also have an **Active** status indicator. When set to Yes, reports in the category with an **Active** status of Yes will run. When set to No, no reports in the category will run, regardless of their **Active** status. Note that some Report Options have their **Active** status set to Yes automatically if there are active reports. This is because the options must always be used. You cannot deactivate them. IMS PA will deactivate them only when all reports are deactivated.

You can use line action **A** to activate a report or a report category and you can use line action **D** to deactivate.

You can use line action **AA** against a report category to activate all reports in the report category and the category itself. Line action **DD** will similarly deactivate all. These line actions entered at the top of the Reports tree will activate or deactivate *all reports and options* in the Report Set.

Maintaining Report Sets

To maintain (create, edit, delete) Report Sets, select option 3 **Report Sets** from the IMS PA primary option menu.

About this task

Option 3 **Report Sets** on the IMS PA primary option menu displays the Report Sets panel, which lists the Report Sets in the nominated Report Sets data set.

If you have not specified a Report Sets data set, IMS PA will allocate a data set for you with default characteristics. To change the Report Sets data set, you can use **Options** > **IMS PA Control Data Sets** in the action bar or option 0.4 **IMS PA Control Data Sets** from the IMS PA primary option menu.

If the data set contains no user-defined Report Sets, IMS PA will provide two sample Report Sets, one log and one monitor, in which a popular choice of reports has been activated. See Figure 66. From here you can select Report Sets to review, update, or submit for batch processing, or you can create new Report Sets.

```
 File  View  Options  Help
--------------------------------------------------------------------------------
                                  Report Sets                 Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> ____

Report Sets Data Set . . . : IMSPA.RSCTL

 /      Name    Type           Description               Changed        ID
 ___    SAMPLOG  LOG  Sample Log Report Set           2018/06/19 00:00 IMSPA
 ___    SAMPMON  MON  Sample Monitor Report Set       2018/06/19 00:00 IMSPA
******************************** End of list ********************************
```

Figure 66. Report Sets list

The Report Sets are listed with the following user-defined attributes:

Name 1–8 character name in ISPF member name format, used to uniquely identify the Report Set within the Report Sets data set.

Type A Report Set is one of the following types according to the type of input data it can process:

- **LOG** Contains the specification of log reports to be generated from specified IMS log data input. See Chapter 20, “Requesting Log reports,” on page 287.
- **MON** Contains the specification of monitor reports to be generated from specified IMS Monitor or DB Monitor data input. See Chapter 22, “Requesting Monitor reports,” on page 491.
- **CEX** Contains the specification of Connect reports to be generated from IMS Connect Extensions event data input. See Chapter 24, “Requesting IMS Connect reports,” on page 567.
- **TRF** Contains the specification of TRF reports to be generated from OMEGAMON TRF extractor file input. See Chapter 26, “Requesting OMEGAMON TRF reports,” on page 627.
- **ATF** Contains the specification of ATF reports to be generated from

OMEGAMON ATF journal input. See Chapter 28, “Requesting OMEGAMON ATF reports,” on page 659.

Description
Free format text up to 32 characters, used to clarify the contents and purpose of the Report Set.

In addition, the Report Sets are listed with the following system-generated attributes:

Changed
Date and time when last updated.

ID The userid that last updated the Report Set.

Line actions:
The following line actions can be performed against Report Sets:

/	Display the menu of line actions
E	Edit the Report Set
S	Select the Report Set (same as Edit)
V	View the Report Set (Edit without Save)
R	Rename the Report Set
SUB	Submit the Report Set
JCL	Build JCL to run the Report Set via the Report Set member
JCM	Build JCL to run the Report Set via command input
RUN	Run the Report Set with prompt for runtime options
D	Delete the Report Set

Primary commands:
From the **View** menu on the action bar, or by direct entry on the command line, two panel-level actions are available:

Refresh (REFR)
To repopulate the list of Report Sets by re-accessing the Report Sets data set.

Sort To sort the list on any one, or a combination of columns. The default sort field is Name. The sort sequence disregards upper and lower case, and can be ascending (ASC) or descending (DESC), with ascending the default for all but the Changed column. The sort order is retained only until Exit or another SORT command is issued.

The LOCATE (L or LOC) command, also available from the **File** menu on the action bar, allows you to locate an entry in the list based on the primary sort field.

Creating new Report Sets

To run one or more reports in a single job and single pass of the input data files, you need to create a Report Set.

Procedure

To create a new Report Set:

1. Select option 3 **Report Sets** from the IMS PA primary option menu.
2. Do either of the following:
   - In the command line, enter NEW followed by the name of the new Report Set and initialization details using the following syntax:

NEW *newname* LOG|MON|CEX|TRF|ATF

or

NEW *newname* MODEL *modelname*|*datasetname*(*modelname*)

- Select **File** > **New** from the action bar. A pop-up dialog window is displayed. Enter the name of the new Report Set, and select the method of initialization as one of the following:
  a. New Log Report Set.
  b. New Monitor Report Set.
  c. New IMS Connect Report Set.
  d. New OMEGAMON TRF Report Set.
  e. New OMEGAMON ATF Report Set.
  f. Reports modelled from an existing Report Set. Specify the name of the model Report Set, and the data set name if not the current data set.

  The following figure shows an example of the dialog window where you can specify the name and type of the new Report Set.

```
                        New Report Set

Specify the name of the new Report Set and the type or model.

Name . . . LRS00002

Type . . . 1  1. Log
              2. Monitor
              3. IMS Connect (includes combined)
              4. OMEGAMON TRF
              5. OMEGAMON ATF
              6. MODEL (specified below)

Model  'IMSPA.RSET(LRS00001)'_____________________________________

Press Enter to create the Report Set.
Enter Exit or Cancel to cancel the request.
```

Figure 67. Specifying a new Report Set

Press Enter when all fields have been specified.

A panel is then displayed where you can view or modify the description of the Report Set and the list of reports it contains. For additional information, see the following topics:

- "Log Report Sets" on page 287
- "Monitor Report Sets" on page 491
- "Connect Report Sets" on page 568
- "TRF Report Set" on page 628
- "ATF Report Set" on page 660

Running Report Sets

The IMS PA dialog generates the JCL for batch report processing.

Procedure

To run your Report Set, Report Category, or individual reports. enter the RUN command.
Before IMS PA generates the JCL to run your reports, you are prompted to specify runtime options. Under certain circumstances, you can elect to bypass this prompt so that IMS PA submits the JCL immediately using options previously specified.

Example

The following figure shows a request to run a Log Report Set.

```
 File  View  Options  Help
--------------------------------------------------------------------------------
                                  Report Sets                 Row 1 to 4 of 4
Command ===> ____________________________________________ Scroll ===> ____

Report Sets Data Set . . . : IMSPA.RSCTL

 /      Name    Type           Description               Changed        ID
 ___    LRS00001 LOG  IMS PA Log Report Set 1          2018/03/27 13:25 DVM05
 RUN    LRS00002 LOG  Modelled on Log Report Set 1     2018/03/27 16:45 JCH09
 ___    MRS00001 MON  IMS PA Monitor Report Set        2018/03/27 15:12 DVM05
 ___    XCONNECT CEX  IMS PA Connect Report Set        2018/06/25 10:00 JCH06
******************************** End of list ********************************
```

Figure 68. Running a Report Set to generate reports

RUN **command**

The RUN command oversees the specification of runtime options and the generation of JCL.

The SUBMIT, JCL, and JCLCMD commands are considered to be specialized RUN requests that predetermine the Execution Mode.

For users of the JCLCMD (or JCM) command to generate JCL with command input, there are two improvements:

1. There is no longer any requirement to save the Report Set prior to issuing the command. This is useful for ad hoc reporting where you can activate the required reports and then issue the JCLCMD command to generate the JCL without first having to save the Report Set. Afterwards you can cancel out of the Report Set leaving it intact.
2. The command comments are no longer bunched at the top of the command input. Instead they are now located immediately above their associated commands.

Specifying runtime options

Before IMS PA generates the JCL to run your reports, you are prompted to specify runtime options.

About this task

However, under certain circumstances, you can elect to bypass this prompt so that IMS PA submits the JCL immediately using options previously specified.

```
  File  SysDefs  Options  Help
--------------------------------------------------------------------------------
                          Run Report Set SAMPLOG
Command ===> ____________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                        ----- Report Interval ------
 System or Group . . . SYSPLEX1  +            YYYY/MM/DD  HH:MM:SS:TH
                                         From -1________  09:00:00:00
File Selection Options:                  To   -1________  16:30:00:00
1  1. Use specified log files
   2. Use DBRC to select log files       Execution Mode:
                                         3  1. Submit Report Set
Unresolved Data Set Options:                2. Edit JCL before submit
1  1. Issue error message                   3. Edit JCL with command input
   2. Edit unresolved JCL
                                         IMS Tools Knowledge Base
Enter "/" to select option               _  Write to the ITKB repository
_  Bypass run-time options prompt           ITKB Server  . . . . ________
```

Figure 69. Specifying runtime options (Log Report Set)

The first thing to notice on the Run Report Set panel is **System Selection**. This specifies the IMS subsystem or Group you wish to report against. The + sign to the right of the input field indicates that selection by prompt is available. Simply position the cursor on the input field and press Prompt (F4) to display a list of systems from which to choose. System Selection alleviates the problem of continually having to go back to System Definitions to set the IMSID exclude indicators.

After you define your IMS subsystems and DBRC environment (using System Definitions), DBRC Log Selection can be requested at run time to automatically select the required Log files for reporting, saving you the effort of entering the Log file data set names manually. Simply specify the required reporting time period and IMS PA will invoke DBRC to select the required SLDS primary log file data sets from the RECON.

Notice the use of relative dates. Specify 0 for today, -1 for yesterday, and so on. This is especially useful when you want to save IMS PA JCL in an automated job scheduler library. Used in conjunction with DBRC Log Selection, the same JCL can run every day without change.

The **Log Selection Options** is where you choose either to use your explicitly specified Log files or DBRC Log Selection.

The **Unresolved Data Set Options** is a useful feature that provides more flexibility when IMS PA is unable to generate complete report JCL. Unresolved data sets occur when the IMS system or Group that you have selected for report processing has missing information in its System Definition. For Log Report Sets this means that either log files or DBRC settings are not specified, depending on your Log Selection Options. For Monitor Report Sets this means than monitor files are not specified.

You have two choices:

- Instruct IMS PA to issue an error message when this occurs. In this case you must return to System Definitions and complete the specifications for the

required IMS systems. You can do this without leaving your Report Set by using the **SysDefs** action bar choice or issuing the SYSDEFS command.

- Instruct IMS PA to leave the data set names unresolved in the JCL. The missing data set names are substituted with a token of `<unresolved>`. In this case, IMS PA forces you to edit the JCL where you can specify the data set names manually, prior to submitting the JCL.

The **Bypass run-time options prompt** allows you to bypass the Run Report Set panel for quick submission, but only under certain circumstances. The Run Report Set panel is never bypassed if:

- This option is not set.
- The RUN command is used to run the Report Set. Only SUBMIT, JCL, and JCLCMD can bypass the runtime prompt. If you have set this option to bypass, then it can only be reset by using the RUN command.
- Required runtime options have not been specified. For example, System Selection is required before report JCL can be generated.
- Report Interval is specified. IMS PA insists that you are aware of and have the opportunity to change the time period for which reporting is to occur.
- DBRC Log Selection is used, but only because this option requires the Report Interval to be specified. The Bypass runtime options prompt replaced the LogInput and MonInput commands and action bar choices of the IMS PA V3R1 dialog.

To redirect output to the IMS Tools Knowledge Base, select **Write to the ITKB repository** and specify the ITKB server name.

RUN command as a line action

The RUN command can also be used as a line action at the report category and individual report level.

When used this way, **RUN** only runs the selected categories and reports, temporarily overriding any **Active** statuses of `No` if necessary. **RUN** line actions always generate JCL with command input because you are overriding the **Active** statuses of the Report Set.

For example, Figure 70 on page 131 shows how to use the **RUN** line action to request the **Transaction Resource Usage** report and all active reports in the **Fast Path Transit Reports** category.

```
EDIT                       Report Set - SAMPLOG                  Line 1 of 29
Command ===> _____________________________________________ Scroll ===> PAGE

Description . . . Sample Log Report Set

Enter "/" to select action.

___           ** Reports **                              Active
     +  ___   Options                                      Yes
     +  ___   Transaction Transit Reports                  Yes
     +  ___   Transaction Transit Reports (Form-based)     No
     -  ___   Resource Usage & Availability Reports        Yes
            ___   Dashboard                                Yes
            ___   Management Exception                     Yes
            RUN   Transaction Resource Usage               No
            ___   Resource Availability                    Yes
            ___   CPU Usage                                Yes
            ___   Internal Resource Usage                  Yes
            ___   MSC Link Statistics                      No
            ___   Message Queue Utilization               No
            ___   Database Update Activity                Yes
            ___   Region Histogram                        No
            ___   OSAM Sequential Buffering               No
            ___   Deadlock                                 Yes
            ___   System Checkpoint                       Yes
            ___   BMP Checkpoint                          No
            ___   Gap Analysis                            No
            ___   Cold Start Analysis                     No
     -  RUN   Fast Path Transit Reports                    Yes
            ___   Transit Options                          Yes
            ___   Analysis                                 Yes
            ___   Log                                      No
            ___   Extract By Interval                     No
            ___   Transaction Exception                   No
     +  ___   Fast Path Resource Usage Reports             No
     +  ___   ATF Enhanced Summary Reports                 No
     +  ___   Trace Reports                                No
        ___   User-Written Reports                         No
              ** End of Reports **
```

Figure 70. Using the **RUN** *line action*

You can also use **RUN** line actions in conjunction with the RUN primary command (from the command line). This generates command input for all active reports in all active categories, as well as for categories and reports selected via the **RUN** line actions.

Viewing or printing report output

To view or print the generated reports, use standard facilities such as SDSF or ISPF option 3.8 **Outlist Utility**.

Procedure

To use SDSF:

1. Press the **Split** (**F2**) key to split your dialog.
2. Select **SDSF** from the ISPF Primary Option Menu.
3. Enter `ST` on the command line.
4. Enter `?` next to your JobID
5. Enter `S` next to the reports you wish to view.

Graphing & Exporting extract by interval data

To view or print GDDM graphs of Extract by Interval data, export the data for use by external programs, or download the exported data to a PC, select 8 **Graphing & Export** from the IMS PA primary option menu.

About this task

This facility is not applicable to the extract data produced by particular reports such as the Transaction (MSGQ/FP) Traffic, CPU Usage and Database Update Activity reports. These extract data sets can be imported directly by external programs such as DB2, or PC tools such as Microsoft Excel. For examples of using these tools for further processing and graphing of the extract data, refer to the *IMS Performance Analyzer for z/OS: Report Reference.*

For more information, see Chapter 3, “Processing extract data sets,” on page 45.

Automated job scheduling

IMS PA reports can be run on a daily basis using an automated job scheduler.

To do this, you need to create JCL than can run every day without modification. This requires that you use:

1. DBRC log selection to automatically select the required SLDS log files. See “Preparing for DBRC Log Selection” on page 199.
2. Relative dates in the **Report Interval** that consistently identify today (0) or yesterday (-1)

The Run Report Set panel in Figure 71 shows the options required to create automated JCL.

```
  File  SysDefs  Options  Help
-------------------------------------------------------------------------------
                         Run Report Set DAILY
Command ===> ____________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                        ----- Report Interval ------
 System or Group . . . WORKPLEX  +            YYYY/MM/DD  HH:MM:SS:TH
                                         From 0           09:00:00:00
File Selection Options:                  To   0           17:00:00:00
2  1. Use specified log files
   2. Use DBRC to select log files       Execution Mode:
                                         2  1. Submit Report Set
Unresolved Data Set Options:                2. Edit JCL before submit
2  1. Issue error message                   3. Edit JCL with command input
   2. Edit unresolved JCL
                                         IMS Tools Knowledge Base
Enter "/" to select option               _  Write to the ITKB repository
_  Bypass run-time options prompt           ITKB Server  . . . . ________
```

Figure 71. Specifying runtime options for automated JCL

The resultant JCL can be saved into a library that is used by an automated job scheduler.

Related concepts:

Chapter 15, “Automated File Selection,” on page 197
DBRC Log Selection is a facility of IMS PA that uses DBRC to automate the selection the log files for report processing.

Chapter 8. Expectation Sets

An Expectation Set specifies your expectations of transaction performance by defining minimum and maximum installation-expected values for nine measures. Log data falling within these bounds is considered “as expected” and not reported. Log data falling outside the bounds is reported as an “exception”.

Expectation Sets can be specified for the following log reports:
- Management Exception
- Transaction (MSGQ) Exception
- Fast Path Transaction Exception

Expectations can be defined as direct values or, for the Management Exception report, relative to historic averages recorded in an Averages Data Set.

If no Expectation Set is specified, there are no performance expectations with which to compare the log data. In this case, the Management Exception report shows data for `This Run` only with no `Expectation` information, while the Transaction (MSGQ/FP) Exception reports treat all transactions as exceptions.

Maintaining Expectation Sets

You can use the IMS PA dialog to maintain (create, edit, delete) Expectation Sets.

Procedure

1. Select option 4 **Expectation Sets** from the IMS PA primary option menu.

   The Expectation Sets panel is displayed, which lists the Expectation Sets in the nominated Expectation Sets data set.
2. If you have not nominated an Expectation Sets data set, IMS PA allocates a data set for you with default characteristics. To change the Expectation Sets data set, select option 0.4 **IMS PA Control Data Sets** from the IMS PA primary option menu.
3. From here you can select Expectation Sets to review or update, or you can create a new Expectation Set.

```
 File  View  Options  Help
--------------------------------------------------------------------------------
                              Expectation Sets              Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> ____

Expectation Sets Data Set . : IMSPA.XSCTL

 /     Name              Description                 Changed         ID
 _   INITTEST  EXPECTATION SET FOR INITIAL TEST  2018/06/25 15:45  JCH09
 _   YEAREND   EXPECTATIONS FOR THE END OF YEAR  2018/06/25 13:28  MKR02
******************************** End of list ********************************
```

Figure 72. Expectation Sets list

All the fields are display-only on this panel. The Expectation Sets are listed with the following user-defined attributes:

Name 1–8 character name in ISPF member name format, used to uniquely identify the Expectation Set within the Expectation Sets data set.

Description
Free format text up to 32 characters, used to clarify the contents and purpose of the Expectation Set.

The Expectation Sets also have the following system-generated attributes:

Changed
Date and time when last updated.

ID The user ID that last updated the Expectation Set.

Line actions:
The valid line actions for the list of Expectation Sets are:

/ Display the menu of line actions
E Edit the Expectation Set
S Select the Expectation Set (same as Edit)
V View the Expectation Set (Edit without Save)
R Rename the Expectation Set
D Delete the Expectation Set

Primary commands:
The following primary commands are available:

NEW name
Define a new Expectation Set member. The name must be unique. If the command is valid, the edit panel is displayed for you to complete the definition. Otherwise, you are prompted to specify valid parameters. Also available from the **File** menu on the action bar.

SELECT
Select (edit) a member in the Expectation Sets member list. If the name is a member in the list, the edit panel is displayed. If the name is omitted or invalid, you are prompted for a valid name. This command is the same as entering line action **S** (Select) or **E** (Edit). Also available from the **File** menu on the action bar.

REFRESH (REFR)
Repopulate the list of Expectation Sets by re-accessing the Expectation Sets data set. Also available from the **View** menu on the action bar.

SORT *field1 field2*
Sort the list on any one, or a combination of columns. The default sort field is Name. The sort sequence disregards upper and lower case, and can be ascending (ASC) or descending (DESC), with ascending the default for all but the Changed column. The sort order is retained only until Exit or another SORT command is issued. Also available from the **View** menu on the action bar.

LOCATE (L or LOC)
Locate an entry in the list based on the primary sort field.

Creating new Expectation Sets

If you want IMS PA to only report data that is outside of your expectations ("exceptions"), you need to create an Expectation Set that specifies threshold values of your expectations for various transaction measurements.

Procedure

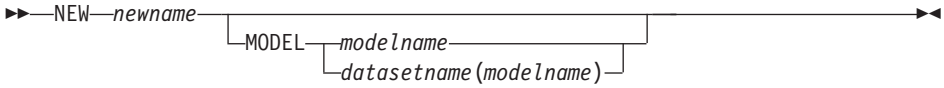
To create an Expectation Set:

1. On the IMS PA primary option menu, select option 4 **Expectation Sets**.

   The Expectation Sets panel is displayed, showing the list of existing Expectation Sets.

2. Either:

   - On the command line, enter NEW followed by the name of the new Expectation Set and optional initialization details using the following syntax:



   - On the action bar, select **File** > **New**.

     A pop-up dialog window is displayed. Enter the name of the new Expectation Set, and select the method of initialization as either:

     a. Based on defaults
     b. Modelled from an existing Expectation Set (specify the name of the model Expectation Set, and the data set name if other than the current data set)

```
                        New Expectation Set

Specify the name of the new Expectation Set and optional model.

Name  . . . . HALFYEAR

Default or MODEL  . . . . 2  1. Default
                             2. MODEL (specified below)

Model  'IMSPA.EXPSET(MIDYEAR)'_____________________________

Press Enter to create the Expectation Set.
Press Exit or Cancel to cancel the request.
```

Figure 73. Specifying a new Expectation Set

When you have specified the required fields, press Enter.

A panel is then displayed for you to view or modify the description of the Expectation Set and its contents.

Specifying Expectations

An Expectation Set consists of a list of transaction codes for which you wish to report only *exceptions* (data outside your expectations). For each transaction code, you specify lower and upper threshold values for a set of nine performance measures. These measures are predefined by IMS PA. Optionally, you can specify the special transaction code *DEFAULT that applies to transaction codes not explicitly listed.

Procedure

To specify expectations:

1. On the IMS PA primary option menu, select option 4 **Expectation Sets**.

The Expectation Sets panel is displayed, showing the list of existing Expectation Sets.

2. To create a new Expectation Set, enter NEW on the command line; to edit an existing Expectation Set, enter **S** next to the Expectation Set.

   The Edit Expectation Set panel is displayed.

3. Specify transaction codes and their threshold values.

```
 File  Edit  Options  Help
--------------------------------------------------------------------------------
                     EDIT Expectation Set - YEAREND          Row 1 to 8 of 12
Command ===> _____________________________________________ Scroll ===> ____

Specify the threshold values.

Description  . . . . EXPECTATIONS FOR THE END OF YEAR

                ---- Transit Time -----  DB    DC    DB     CPU    Proc
/  TranCode  %  Total Input Proc  Outpt  Calls Calls Waits  Time   Rate
             _  _____ _____ _____ _____  _____ _____ _____  _____  _____
                _____ _____ _____ _____  _____ _____ _____  _____  _____
--------------------------------------------------------------------------------
_  *DEFAULT  _  121   5     50    _____  2.1   2     _____  20     0.2
                150   99    120   111    30.1  5     2      50     2
_  DSFFHR2L  _  120   3     50    _____  2     2     _____  20     0.2
                150   5     122   1      30    5     2      50     2
_  DSFFHR2M  _  120   2     50    12     2     2     _____  20     0.2
                150   5     120   1      30    5     2      50     2
_  DSFFHR2N  _  120   2     50    _____  2     2     _____  20     0.2
                150   5     120   1      30    5     2      50     2
_  DSFFHR2O  _  120   2     50    _____  2     2     _____  20     0.2
```

Figure 74. Defining an Expectation Set

Values can be expressed as integers in the range 0–99999, or with one decimal place in the range 0–999.9. Direct values for transit or CPU times are expressed only as integers; decimal positions are rounded to the nearest integer. Direct values that are not supplied default to 0. Percentage values default at run time to 50% lower and 20% higher than the value in the Averages Data Set.

The pair of data rows with no **TranCode** field above the dividing line (the full-width horizontal line) is used for entering column global values and column adjustment values.

The first row affects minimum values and the second affects maximum values. Specifying a value in the first row causes all rows with matching expectation type (direct value or percentage) to have their minimum expectation in that column modified.

Similarly, specifying a value in the second row causes all rows with matching expectation type (direct value or percentage) to have their maximum expectation in that column modified.

Measurements lower than the minimum expectation or higher than the maximum expectation are reported as “exceptions”.

The rows below the dividing line are grouped two per TranCode. The first row contains minimum expected values and the second contains maximum expected values for the specified transaction code.

The Expectation Set fields are:

Description
Default: IMS PA Expectation Set

A descriptive title used to clarify the contents and purpose of the Expectation Set.

TranCode

Represents a 1- to 8-character transaction code contained in the input message.

A transaction code of `*DEFAULT` is the default expectation which may optionally be specified. For transaction codes not explicitly listed, the default values specified in the `*DEFAULT` row are applied at run time. If more than one of these rows is specified, the last one takes precedence.

Rows with a blank transaction code are deleted on Reset or Exit.

% (Expectation Type)

Default: Blank. Expected values are specified as direct values.

Expectation Type determines how the specified expectation values are to be interpreted.

Leave blank to indicate that the expected values for this transaction code are specified as direct values. If the actual measurement is outside the specified range, it is reported as an “exception”.

Select with a **/** to indicate that all expected values specified for this transaction code are percentages. If the actual measurement deviates from the transaction code's average by more than the specified minimum percentage, or exceeds the average by more than the specified maximum percentage, it is reported as an “exception”. Percentage values apply only to the Management Exception report when an Input Averages Data Set is specified. In all other cases, they are ignored.

Transit Time

Transit time in milliseconds.

Total Total transit time (milliseconds) per transaction; the time between input message arrival and output message send. In the example, transaction code DSFFHR2L has an expected minimum transit time of 120 milliseconds and maximum of 150 milliseconds per transaction.

Input Input queue time (milliseconds) per transaction; the time between input message arrival and message processing start. In the example, transaction code DSFFHR2L has an expected minimum input queue time of 3 milliseconds and maximum of 5 milliseconds per transaction.

Proc Processing time (milliseconds) per transaction. Processing (or execution) time is the time between message processing start and message processing end. In the example, transaction code DSFFHR2L has an expected minimum processing time of 50 milliseconds and maximum of 122 milliseconds per transaction.

Outpt Output queue time (milliseconds) per transaction; the time between message processing end and output message send. In the example, transaction code DSFFHR2L assumes the default 0 for the minimum expected output queue time and has a specified expected maximum output queue time of 1 millisecond per transaction.

DB Calls

Represents the number of database calls issued by the transaction. For Fast Path transactions, the database calls include both DEDB and MSDB DL/I calls. In the example, transaction code DSFFHR2L has an expected minimum of 2 database calls and maximum of 30 database calls per transaction.

DC Calls

Represents the number of data communication calls issued by the transaction. This is not applicable to Fast Path transactions. In the example, transaction code DSFFHR2L has an expected minimum of 2 DC calls and maximum of 5 DC calls per transaction.

DB Waits

Represents program isolation waits for the transaction; the number of database waits, for program isolation enqueue, issued by the transaction. For Fast Path transactions, it represents the total number of DEDB UOW, CI, and OBA waits. In the example, the number of DB Waits for transaction code DSFFHR2L is expected to be in the range 0 to 2.

CPU Time

Represents the amount of CPU Time (milliseconds) to process the transaction. This is not applicable to Fast Path transactions. The example shows that the expected CPU Time for transaction code DSFFHR2L is between 20 to 50 milliseconds.

Proc Rate

Represents transaction processing rate (transactions per minute). This is not applicable to the Transaction (MSGQ/FP) Exception reports. In the example, the expected execution rate of transaction code DSFFHR2L is in the range 0.2 to 2 transactions per minute.

Line actions:

The following line actions can be performed on the contents of Expectation Sets to create or remove Expectation data for specific transaction codes:

/ Display the menu of line actions
I Insert a null row after this row
R Repeat this row
C Copy this row
M Move this row
A Move/Copy after this row
B Move/Copy before this row
D Delete this row

The resulting sequence is retained only for the current edit or view session; by default, the list is presented in TranCode order.

Primary commands:

The following primary commands are available:

Reset (RES)

Remove all line actions and delete any blank rows. Remove all rows where the transaction code is blank. Also available from the **Edit** menu on the action bar.

SAVE Write all unsaved changes to the Expectation Sets data set. If the Expectation Set already exists, it is overwritten. If it does

not exist, it is created. Editing of the data can continue after the save is complete. Also available from the **File** menu on the action bar.

SAVEAS name
Save the Expectation Set as the specified name. If only a member name is specified, the current Expectation Sets data set is assumed. To save in another data set, specify the DSN and member name. If the Expectation Set already exists, it is overwritten. If it does not exist, it is created. Editing of the data can continue after the save is complete. Also available from the **File** menu on the action bar.

Adjusting Expectations

You may need to adjust the values in an Expectation Set if characteristics of your IMS installation change. For example, if a new CPU is installed with processing capacity twice that of the previous CPU, you may wish to halve associated expectations.

Procedure

- To replace a single value in the Expectations Set, overtype it with the required value.
- To arithmetically adjust a value, overtype it with an operator followed by a value:

  `*` Multiply. For example `*1.5`

  `/` Divide. For example `/1.5`

  `+` Add. For example `+1.5`

  `—` Subtract. For example `-1.5`

  If you omit the operator, the cell is changed to the specified value.

  Commands entered in the global cells (above the dividing line) apply to all corresponding cells in the column. For example, if `%` is selected in the global area, then values entered in the minimum value row will be applied to all % minimum values in the same column, and a value in the maximum value row will be applied to all % maximum values in the same column. Similarly, if `%` is not selected in the global area, then only values in rows that do not have % selected will be affected.

Chapter 9. Averages Data Sets

Averages Data Sets provide historic average values which can be used by the Management Exception report to identify data for exception reporting.

For details on how the report uses these values, see "Management Exception report" on page 331.

Averages Data Sets must be sequential data sets as they can be specified as both input and output to the report process. See Figure 178 on page 334, which shows the panel used to specify the input and output Averages Data Sets to be used by the Management Exception report.

The strategy you adopt for your Averages Data Sets may be to use either:

- One data set only to keep a running tally of averages, updated by each run.
- Multiple data sets to save the running average after each of a number of report runs (for example, a generation data group (GDG) of at least 10 to 15 generations).

Creating new Averages Data Sets

To create a new Averages Data Set, use ISPF option 3.2.

About this task

Default allocation details for output Averages Data Sets can be specified in **Reporting Allocation Settings** on the action bar **Options** menu. See Figure 13 on page 71. The default attributes are applied at the time the Report Set JCL is built if the specified output Averages Data Set does not exist. They are *not* applied to input Averages Data Sets which are assumed to exist at the time of report generation.

Note: IMS PA stores an Averages Data Set in a special format. It must *not* be modified using facilities other than IMS PA as this may make it unusable by IMS PA. Should this occur, an error message similar to the following will be displayed when you attempt to view or edit the data set:

```
The EDIT request cannot be performed on the specified Averages Data Set
as the file is not in Average format.
```

Procedure

Use ISPF option 3.2 to allocate and catalog a sequential data set with VB format, a record length of 4092, and an appropriate blocksize.

Maintaining Averages

You can use the IMS PA dialog to view or edit values in an Averages Data Set.

About this task

Typically, you use the Management Exception reporting job to update values in an Averages Data Set. However, under some circumstances, you might want to manually update these values.

Procedure

1. Select option 5 **Averages** from the IMS PA primary option menu.

```
                          Averages Data Set
Command ===> ____________________________________________________

Specify the name of the Averages Data Set.

  Averages Data Set  . . . 'IMSPA.AVERAGES.D2018'_________________

  /  "/" to Edit the Averages Data Set

Press Enter to proceed with Averages Data Set processing.
Enter EXIT or CANCEL to leave without processing.
```

Figure 75. Averages Data Set

The field on this panel is:

Averages Data Set
The name of an Averages Data Set, which must already be allocated and cataloged.

From this panel you can view or edit the Averages data set.

2. Type / to edit the data set, or leave blank and press Enter to view it.

Specifying Averages

When you view or edit the Averages data set, IMS PA displays a panel similar to the Expectations data set.

About this task

```
  File  Edit  Options  Help
-------------------------------------------------------------------------------
                          EDIT Averages Data Set             Row 1 to 2 of 2
Command ===> ____________________________________________ Scroll ===> PAGE

Averages Data Set  . . : IMSPA.AVERAGES.D2018

                      ---- Transit Time -----  DB    DC    DB     CPU    Proc
/  TranCode   Count   Total Input Proc  Outpt  Calls Calls Waits  Time   Rate
                      _____ _____ _____ _____  _____ _____ _____  _____  _____
-------------------------------------------------------------------------------
_  ________           _____ _____ _____ _____  _____ _____ _____  _____  _____
_ ________           _____ _____ _____ _____  _____ _____ _____  _____  _____
******************************** End of list ********************************
```

Figure 76. Edit Averages Data Set

The data row with no **TranCode** field above the dividing line (the full-width horizontal line) is used for entering column global values and column adjustment values.

The rows below the dividing line each define average values for one TranCode. Specifying a value above the line causes all rows below the line to have their average in that column modified accordingly.

Values are expressed as integers in the range 0 to 99999, or with one decimal place in the range 0 to 999.9. Values for transit or CPU times are expressed only as integers; decimal positions are rounded to the nearest integer. Averages that are not supplied for a newly-entered transaction code default to 0; if values for a pre-existing transaction code are erased, the pre-existing values are reinstated.

The Averages fields are:

TranCode
Each row contains average data for one transaction code.

For transaction codes not explicitly listed there are no averages held. However, IMS PA automatically maintains averages for every transaction code that it encounters.

Rows with a blank transaction code are deleted on Reset or Exit.

Count Transaction Count is the total number of transactions processed for the specified transaction code, upon which the average values in the row have been based.

The transaction count directly affects the average values and therefore cannot be modified.

Transit Time
Transit time per transaction.

Total The average total transaction transit time (milliseconds) per transaction; the time between input message arrival and output message send.

Input The average input transit time (milliseconds) per transaction; the time between input message arrival and message processing start.

Proc The average processing transit time (milliseconds) per transaction; the time between message processing start and message processing end.

Outpt The average output transit time (milliseconds) per transaction; the time between message processing end and output message send.

DB Calls
The average number of database calls per transaction.

DC Calls
The average number of data communication calls per transaction.

DB Waits
The average number of database waits, for program isolation enqueue, per transaction.

CPU Time
The average CPU time (milliseconds) per transaction.

Proc The processing rate; the number of transactions per minute. This number is calculated by the Management Exception report as the Transaction Count divided by the elapse time for that transaction. If modified by the user, it is

rounded to the nearest integer which is exactly divisible into the Transaction Count, thereby making the elapse time a whole number of minutes.

Line actions:

The following line actions can be performed on Averages Data Sets to create or remove averages data for specific transaction codes:

/ Display the menu of line actions
I Insert a null row after this row
R Repeat this row
C Copy this row
M Move this row
A Move/Copy after this row
B Move/Copy before this row
D Delete this row

The resulting sequence is retained only for the current edit or view session; by default, the list is presented in TranCode order.

Primary commands:

The following primary commands are available:

Reset (RES)
Remove all line actions and delete any blank rows. Remove all rows with a blank transaction code. Also available from the **Edit** menu on the action bar.

SAVE Write all unsaved data to the Averages data set overwriting the contents of the data set. Editing of the data can continue after the save is complete. Also available from the **File** menu on the action bar.

Note: The SaveAs command is not available on this panel.

Adjusting Averages

You may need to adjust the values in an Averages Data Set if characteristics of your IMS installation change. For example, if a new CPU is installed with processing capacity twice that of the previous CPU, you may wish to halve associated averages.

About this task

Arithmetic operations that can be performed are:

* Multiply. For example, `*1.5`

/ Divide. For example, `/1.5`

\+ Add. For example, `+1.5`

\- Subtract. For example, `-1.5`

Procedure

To replace a single value in the Averages Data Set, overtype it with the required value. To arithmetically adjust a value, overtype it with an operator followed by a value. For example, `*1.5` If you don't specify an operator, the cell is changed to the specified value. Commands entered in the global cells (above the dividing line) apply to all cells in the column.

Chapter 10. Object Lists

A major feature of IMS PA is the ability to include or exclude input records, based on the values of fields such as Database, LTERM, and Transaction code. This is done by specifying the field types (object types), and values of each object type to either include or exclude.

Commonly, more than one value needs to be included or excluded. Therefore an Object List must be used to define the values. For example, in the Transaction Transit reports, you may want to include only two or three suspect transaction codes. You would create an Object List containing the codes, and specify this Object List as a selection criterion when requesting the report.

Each Object List has a specified type, and can only contain items or sublists of that type. The types are:

APGRP
: Application Group

AREA DEDB Area

BLKID
: Block ID

CLASS
: Message Class

CLIENT
: Connect Client ID (Connect reports only)

DB Database

DD DDname

DDGRP
: DDname Group

ESSID
: External Subsystem ID

IMSID
: IMS Subsystem ID

KEY Key

LINE Line

LN/PT Line/Terminal

LTERM
: Logical Terminal

MSGID
: Message ID

NODE
: VTAM Node

PORT TCP/IP Port (Connect reports only)

PROG Program Name (PSB)

RECCD
: Record Code

RGJOB
: Region Job Name

RGPST
: Region ID by PST Number

RTCDE
: Routing Code

TPIPE Tpipe (Connect reports only)

TRAN Transaction Code

USERID
User ID
USRDEF
User-defined Object

CLIENT, PORT, and TPIPE are used when specifying Selection Criteria for IMS Connect reports. They are not relevant to Log, Monitor, TRF, or ATF reporting.

Object Lists are also used to define application and DDname groupings to appear in monitor reports.

Object Lists can be defined as a hierarchy, by including the names of other Object Lists. This allows a basic set of Object Lists to be used to create higher level lists, avoiding the need to repetitively create and maintain detailed lists. This can be done for all types of Object Lists and to any depth of hierarchy. For example, as depicted in Figure 77, the Finance Databases Object List could contain the names of three other Database Object Lists: Payroll, Debtors, and Creditors, which in turn contain the actual database names.

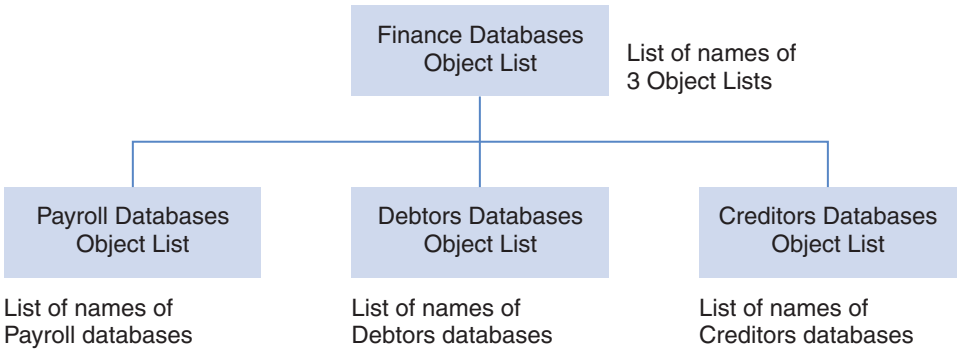


Figure 77. Hierarchical Structure of Object Lists

Maintaining Object Lists

To maintain (create, edit, delete) Object Lists, use the IMS PA dialog.

Procedure

Select option 6 **Object Lists** from the IMS PA primary option menu.
The Object Lists panel is displayed, which lists the Object Lists in the nominated Object Lists data set.
If you have not specified an Object Lists data set, IMS PA allocates a data set for you with default characteristics. To change the Object Lists data set, you can use **Options** in the action bar or option 0.4 **IMS PA Control Data Sets** from the IMS PA primary option menu.
From here you can select Object Lists to review or update, or you can create a new Object List.

```
  File  View  Options  Help
--------------------------------------------------------------------------------
                                Object Lists                 Row 1 to 3 of 3
Command ===> _____________________________________________ Scroll ===> ____

Object Lists Data Set  . . : IMSPA.OLCTL

 /    Name    Type             Description               Changed        ID
 _   CL000001 CLASS  CLASS OBJECT LIST 01            2018/05/27 12:27 JCH02
 _   DG000001 DDGRP  DD GROUP OBJECT LIST 01         2018/05/27 09:00 MKR08
 _   LL000001 LN/PT  LINE/PTERM OBJECT LIST 01       2018/05/27 08:57 DAM13
******************************** End of list ********************************
```

Figure 78. Object Lists panel

All the Object List fields are display-only on this panel.
The Object Lists are listed with the following user-defined attributes:

Name 1–8 character name in ISPF member name format, used to uniquely identify the Object List within the Object Lists data set.

Description
Free-format text up to 32 characters, used to clarify the contents and purpose of the Object List.

In addition, the Object Lists are listed with the following system-generated attributes:

Type Type of Object List, as defined in Object List types . Can be one of APGRP, AREA, BLKID, CLASS, DB, DD, DDGRP, ESSID, IMSID, KEY, LINE, LN/PT, LTERM, MSGID, NODE, PROG, RECCD, RGJOB, RGPST, RTCDE, TRAN, USERID, USRDEF, CLIENT, PORT, or TPIPE.

Changed
Date and time when last updated.

ID The userid that last updated the Object List.

Line actions:
The following line actions can be performed on the list of Object Lists:

- **/** Display the menu of line actions
- **E** Edit the Object List
- **S** Select the Object List (same as Edit)
- **V** View the Object List (Edit without Save)
- **R** Rename the Object List
- **D** Delete the Object List

Primary commands:
The following primary commands are available.

Refresh **(**REFR**)**
To re-populate the list of Object Lists by re-accessing the Object Lists data set. Also available from the **View** menu on the action bar.

Sort To sort the list on any one, or a combination of columns. The default sort field is Name. The sort sequence disregards upper and lower case, and can be ascending (ASC) or descending (DESC), with ascending the default for all but the Changed column. The sort sequence is retained only until Exit or another SORT command is issued. Also available from the **View** menu on the action bar.

LOCATE **(**L **or** LOC**)**
: Locate an entry in the list based on the primary sort field. Also available from the **View** menu on the action bar.

NEW *name type* | Model *modelname*
: Define a new Object List. If the command is valid, the edit panel is displayed for you to complete the definition. Otherwise, you are prompted to specify valid parameters. Also available from the **File** menu on the action bar.

SELECT *name*
: Select (edit) a member in the Object Lists member list. If the name is a member in the list, the edit panel is displayed. If the name is omitted or invalid, you are prompted for a valid name. This command is the same as entering line action S (Select) or E (Edit). Also available from the **File** menu on the action bar.

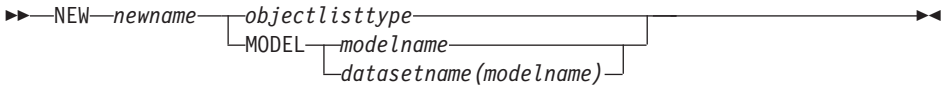
Creating Object Lists

If you want a reusable list of values for including or excluding input records from reports or extracts, you need to create an Object List.

Procedure

To create an Object List:

1. Either:
   - In the command line, enter NEW followed by the name of the new Object List and initialization details using the following syntax:



   - Select **File** > **New** from the action bar. A pop-up dialog window is displayed as shown in Figure 79 on page 151. Enter the name of the new Object List, and select the method of initialization as either:
     a. One of the Object List types
     b. Modelled from an existing Object List (specify the name of the model Object List, and the data set name if other than the current data set)

```
                              New Object List

Specify the name of the new Object List and the type or model.

Name  . . . . ASSETS

List Type or MODEL
__   1.  Application Group   11. Line                21. User ID
     2.  Block ID            12. Line/Terminal       22. User-Defined
     3.  Class               13. LTERM               23. VTAM Node
     4.  Database            14. Message ID
     5.  DDname              15. Program Name        24. Connect Client ID
     6.  DDname Group        16. Record Code         25. TCP/IP Port
     7.  DEDB Area           17. Region ID by PST    26. Tpipe
     8.  External SSID       18. Region Jobname
     9.  IMS Subsystem ID    19. Routing Code        27. MODEL (see below)
     10. Key                 20. Transaction Code

Model . . . . ____________________________________________________

Press ENTER to create the Object List, EXIT or CANCEL to leave.
```

Figure 79. Specifying a new Object List

2. Press Enter when the required fields have been specified.

   A panel is displayed where you can view or modify the description of the Object List and its list of values.

   For an explanation of how to edit Object Lists see "Types of Object Lists and values."

Types of Object Lists and values

There are several types of Object List. The type of an Object List determines what the values are allowed in the Object List, and what those values represent.

Table 1. Types of Object Lists and their attributes

Type of Object List	Values allowed	Attribute	Mask allowed	Range allowed
APGRP	APGRP or PROG Object List name	1-8 character name	no	no
AREA	DEDB Area name	1-8 character name	yes	yes
BLKID	Block ID (DLOGRBA in log record 50)	4 bytes hexadecimal	no	yes
CLASS	Message Class	numeric 1-255	no	yes
CLIENT	IMS Connect Client ID	1-8 characters	yes	yes
DB	Database name	1-8 character name	yes	yes
DD	DDname	1-8 character name	yes	yes (but not in DDGRP)
DDGRP	DDGRP or DD Object List name	1-8 character name	no	no
ESSID	External Subsystem ID	1-4 character name	yes	yes
IMSID (Datastore)	IMS Subsystem ID or Datastore	1-4 character name	yes	yes
KEY	Key (KSDS)	1-8 characters	yes	yes

Table 1. Types of Object Lists and their attributes (continued)

Type of Object List	Values allowed	Attribute	Mask allowed	Range allowed
LINE	Line number	1-8 digit number	no	yes
LN/PT	Line/Terminal	1-8 digits each *nnnnnnnn/nnnnnnnn*	no	yes
LTERM	Logical Terminal	1-8 character name	yes	yes
MSGID	Message ID	1-8 characters	yes	yes
NODE	VTAM Node name	1-8 character name	yes	yes
PORT	TCP/IP Port Number	1-65535	no	yes
PROG	Program (PSB) name	1-8 character name	yes	yes (but not in APGRP)
RECCD	Record Codes, Log or Monitor	1 byte hexadecimal (2 hex characters)	no	yes
RGJOB	Region ID by Job	1-8 character name	yes	yes
RGPST	Region ID by PST	1-4095	no	yes
RTCDE	Routing Code	1-8 character name	yes	yes
TPIPE	Tpipe	1-8 characters	yes	yes
TRAN	Transaction Code	1-8 character name	yes	yes
USERID	User ID	1-8 characters	yes	yes
USRDEF	User-defined Code	1-8 characters	yes	yes

Note: Object Lists of every type can also contain entries that are Object Lists of the same type. For example, a PROG Object List can contain the names of other PROG Object Lists.

Specifying values in Object Lists

You can specify any number of values in an Object List. Depending on the type of Object List and its purpose, values may be specified as single values, ranges of values, masks, or groups. You can also specify sublists, which are Object Lists of the same type as the Object List being edited.

About this task

When an Object List is used for reporting, the list of objects processed includes all specified values in the Object List and all values in the Sublist Object Lists as well.

The order of entries in the list is not relevant to the batch report processors.

Procedure

On the Object List edit panel, specify values appropriate for the type of Object List:

Description

Default: IMS PA OBJECT LIST

Free format text up to 32 characters to describe the contents and purpose of the Object List.

Sublist

Depending on the Object List type, specifies a value, Object List, or Object List type.

For APGRP and DDGRP Object Lists:

Specify whether the List Name is the same type as the Object List being edited (/) or a different type (blank). For example:

- An APGRP Object List can specify APGRP (/) or PROG (blank) Lists that define groups of applications for the Application Detail report.
- A DDGRP Object List can specify DDGRP (/) or DD (blank) Lists that define groups of DDnames for the Database IWAIT reports.

List Name: Object Lists of type APGRP and DDGRP define groups of values for reporting purposes. They enable report details to be summarized by group. Each group of values is defined in an Object List which you specify as the List Name.

For other types of Object Lists:

Indicate whether the **From** field specifies an Object List (/) or an actual value or mask (blank).

The usual method of populating an Object List is to specify the required values. In this case the Sublist indicator remains blank.

You may have a requirement to include one Object List inside another. This is called a Sublist. In this case, set the Sublist indicator to /.

From must be specified.

To is only specified if a range of values is being specified.

Validation Warning

Warnings indicate errors such as `Member not found` or `Member not of correct type.` ("Member" refers to an Object List name, as Object Lists are stored as members in the Object Lists Data Set.) Such occurrences are given as warnings rather than errors to allow you to specify them on the current panel and take subsequent action to correct the situation, such as to then create the specified Object List.

If **Warning Confirmation** has been requested from option 0.1 **IMS PA Settings**, you will be prompted to confirm any Exit or Save attempt if a warning is outstanding.

Line actions:

The following line actions can be performed on rows within an Object List:

/ Display the menu of line actions
I Insert a null row after this row
R Repeat this row
C Copy this row
M Move this row
A Move/Copy after this row
B Move/Copy before this row
D Delete this row

Primary commands:

The following primary commands are available:

Reset (RES)
Remove all line actions and delete any blank rows. Also available from the **Edit** menu on the action bar.

SAVE Write all unsaved changes to the Object Lists data set. If the Object List already exists, it is overwritten. If it does not exist, it is created. Editing of the data can continue after the save is complete. Also available from the **File** menu on the action bar.

SAVEAS *name*
Save the Object List as the specified name. If only a member name is specified, the current Object Lists data set is assumed. To save in another data set, specify the DSN and member name. If the Object List already exists, it is overwritten. If it does not exist, it is created. Editing of the data can continue after the save is complete. Also available from the **File** menu on the action bar.

Examples

Single values
For example, to specify that the PAYMAST and PAYHIST databases are to be included (or excluded), define a Database (type DB) Object List which contains the database names as shown in Figure 80.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
                    EDIT DB Object List - DB000001            Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> ____

Specify the Database values.

Description  . . . . *** DATABASE OBJECT LIST ***____

Enter "/" to select action.

              - Range (or sublist) -
     Sublist  From:        To:             Validation Warning
 _      _     PAYMAST_     ________
 _      _     PAYHIST_     ________
```

Figure 80. Specifying Single Values in an Object List

Ranges of values
For example, to specify that regions 1, 4, 5, 6, 8, 11, 12, and 13 are to be included (or excluded), define a Region ID by PST (type RGPST) Object List which contains the values as shown in Figure 81 on page 155.

Ranges are not supported for APGRP and DDGRP Object Lists, nor for their PROG and DD sublists.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
                  EDIT RGPST Object List - RG000001           Row 1 to 4 of 4
Command ===> ____________________________________________________ Scroll ===> ____

Specify the Region ID by PST Number values.

Description  . . . . IMS PA OBJECT LIST FOR REGIONS__

Enter "/" to select action.

              - Range (or sublist) -
     Sublist  From:        To:             Validation Warning
 _      _     1_______     ________
 _      _     4_______     6_______
 _      _     8_______     ________
 _      _     11______     13______
```

Figure 81. Specifying Ranges of Values in an Object List

Generic forms of the value (Masking)

Specify a pattern using the masking character * (asterisk) for any number of characters. For example, specifying a transaction code value of T*K will match transaction codes TK, TRK, TURK but not TURKEY, and THWACK but not ATTACK.

Masking is not supported for Object Lists of type APGRP, BLKID, CLASS, DDGRP, LINE, LN/PT, LOGCD, or RGPST.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
                  EDIT TRAN Object List - TC000002           Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> ____

Specify the Transaction Code values.

Description  . . . . *** TRANCODE OBJECT LIST ***____

Enter "/" to select action.

              - Range (or sublist) -
     Sublist  From:        To:             Validation Warning
 _      _     T*K_____     ________
 _      _     *FUN*___     ________
```

Figure 82. Specifying Generic Values (Masking) in an Object List

Group values

These are Application Groups and DD Groups which allow, respectively, a hierarchical grouping of Program (PSB) Names and DDnames. Figure 83 on page 156 shows a DD Group Object List which contains two further DD Group sublists FINANCE and STOCK, and two DDname Object Lists EMPLOYEE and PAYROLL. There are validation warnings for two of them because they have not yet been created.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
                  EDIT DDGRP Object List - DG000001          Row 1 to 4 of 4
Command ===> _____________________________________________ Scroll ===> ____

Specify the DDname Group values.

Description  . . . . DD GROUP OBJECT LIST 01_________

Enter "/" to select action.

                   Sublist   List Name      Validation Warning
               _      _      PAYROLL    Member was not found
               _      /      FINANCE
               _      _      EMPLOYEE
               _      /      STOCK      Member was not found
```

Figure 83. Specifying Group Values in an Object List

Using Object Lists in Selection Criteria

Rather than specifying multiple individual values in selection criteria, you can refer to the name of an object list (that contains those values).

About this task

Here is part of a typical panel that allows record selection for a report:

```
Selection Criteria:
    Object Type       Inc/Exc   Object   List    Validation Warning
 Transaction Code       ___    ________   _
 LTERM                  ___    ________   _
```

Figure 84. Using Object Lists to Select Records

In the row for **Transaction Code**:

Inc/Exc
Type INC to include only the specified Transaction Codes. Type EXC to exclude the specified Transaction Codes.

Object
Specify a transaction code, a mask (using * to represent non-compare positions), or the name of an Object List of type TRAN.

List Select **List** with a / if **Object** is an Object List, otherwise it is assumed to be an individual transaction code or a mask.

Example

For example, to include only transaction codes listed in Object List TL000001 specify:

```
 Selection Criteria:
     Object Type       Inc/Exc   Object   List    Validation Warning
  Transaction Code       INC    TL000001   /
```

To exclude transaction code PAY specify:

```
 Selection Criteria:
     Object Type       Inc/Exc   Object   List    Validation Warning
  Transaction Code       EXC    PAY        _
```

Chapter 11. Distributions

A feature of IMS PA is the ability to produce graphs showing the distribution (dispersion) of the values of performance measures (for example, the distribution of Transit Times). Each graph can be individually customized by specifying range values and labels in a PDS member called a *Distribution*.

For example:

Value ranges (Limits) = 1,5,10,30,50,100,300,500,1000
Values Title = Sc Mil Mic (seconds, milliseconds, microseconds)
Values Multiplier = 1000
Values Edit Mask = ZZZ.ZZ9.999

```
 Report from 08Jun2018  17.24.39.87       IMS 15.1.0        IMS Performance Analyzer 4.4      Report to 08Jun2018  17.29.20.92
                                                  Region Distributions
Region Totals       From 08Jun2018 17.24.58.55 To 08Jun2018  17.29.20.92   Elapsed=   0 Hrs   4 Mins  41.051.167 Secs
               Elapsed/Call                  |               Elapsed/IWAIT                 |               IWAITs/Call

    Average  Std-Dev/Avg        Max Value    |     Average  Std-Dev/Avg        Max Value    |     Average  Std-Dev/Avg        Max Value
     58.370       18.205       34.739.656    |      15.386        8.304        3.303.220    |        0.32        2.689               10

      Range Count in  Totals all Regions     |       Range Count in  Totals all Regions     |       Range Count in  Totals all Regions
 Sc Mil Mic   Range                          |  Sc Mil Mic   Range                          |        Count   Range
 To Maximum      13|                         |  To Maximum       2|                         |  To Maximum       1|
  1.000.000       1|                         |   1.000.000       0|                         |           8       0|
    500.000       0|                         |     500.000       0|                         |           7       1|
    300.000       5|                         |     300.000       5|                         |           6       0|
    100.000      21|                         |     100.000      10|*                        |           5      11|
     50.000      48|*                        |      50.000      19|*                        |           4      37|*
     30.000     146|***                      |      30.000     155|********               |           3      39|*
     10.000      77|*                        |      10.000     176|*********              |           2      93|**
      5.000     206|****                     |       5.000     261|**************         |           1     219|****
      1.000    1798|********************     |       1.000     114|******                 |           0    1914|********************
          --------|   |   |   |   |   |      |           --------|   |   |   |   |   |      |        --------|   |   |   |   |   |
   Total=     2,315   10  20  30  40  50%    |    Total=       742   10  20  30  40  50%    |    Total=     2,315   10  20  30  40  50%
-------------------------------------------------------------------------------------------------------------------------------------------
```

Figure 85. Report output example: Distributions

Nominating the Distribution is the mechanism for requesting the graph, as well as defining its characteristics. Sample Distributions are provided for all distribution graphs.

Maintaining Distributions

You can use the IMS PA dialog to maintain (create, edit, delete) Distributions.

Procedure

1. Select option 7 **Distributions** from the IMS PA primary option menu.

   The Distributions panel is displayed, which lists the Distributions in the nominated Distributions data set.

2. If you have not nominated a Distributions data set, IMS PA allocates a data set for you with default characteristics. To change the Distributions data set, select option 0.4 **IMS PA Control Data Sets** from the IMS PA primary option menu.

   If the data set contains no user-defined Distributions, IMS PA populates it with the sample Distributions listed in "Distribution and Report cross-reference" on page 161.

3. From here you can select Distributions to review or update, or you can create new Distributions.

```
 File  View  Options  Help
-------------------------------------------------------------------------------
                                Distributions              Row 1 to 3 of 3
Command ===> _____________________________________________ Scroll ===> ____

Distributions Data Set . . : IMSPA.DIST

 /     Name             Description                Changed         ID
 _   DS000001  Transit Time Statistics          2018/06/25 10:32  JCH02
 _   DS000002  ELAPSCH                          2018/06/25 10:35  JCH02
 _   DS000003  IWTSUMMY                         2018/06/25 14:27  JCH02
******************************** End of list ********************************
```

Figure 86. Distributions list

The Distributions are listed with the following user-defined attributes:

Name 1–8 character name in ISPF member name format, used to uniquely identify the Distribution within the Distributions data set.

Description
Free format text up to 32 characters, used to clarify the contents and purpose of the Distribution.

In addition, the Distributions are listed with the following system-generated attributes:

Changed
Date and time when last updated.

ID The userid that last updated the Distribution.

Line actions:
The following line actions can be performed on Distributions:

- **/** Display the menu of line actions
- **E** Edit the Distribution
- **S** Select the Distribution (same as Edit)
- **V** View the Distribution (Edit without Save)
- **R** Rename the Distribution
- **D** Delete the Distribution

Primary commands:
The following primary commands are available:

Refresh (REFR)
Repopulate the list of Distributions by re-accessing the Distributions data set. Also available from the **View** menu on the action bar.

Sort Sort the list on any one, or a combination of columns. The default sort field is Name. The sort sequence disregards upper and lower case, and can be ascending (ASC) or descending (DESC), with ascending the default for all but the Changed column. The sort sequence is retained only until Exit or another SORT command is issued. Also available from the **View** menu on the action bar.

LOCATE (L or LOC)
Locate an entry in the list based on the primary sort field. Also available from the **View** menu on the action bar.

NEW *name* **Model** *modelname*
Define a new Distribution member. If the command is valid, the edit panel is displayed for you to complete the definition. Otherwise, you are prompted to specify valid parameters. Also available from the **File** menu on the action bar.

SELECT *name*
Select (edit) a member in the Distributions member list. If the name is a member in the list, the edit panel is displayed. If the name is omitted or invalid, you are prompted for a valid name. This command is the same as entering line action S (Select) or E (Edit). Also available from the **File** menu on the action bar.

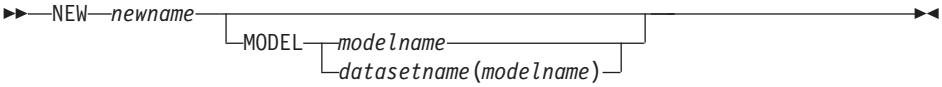
Creating new Distributions

If you want a distribution graph with custom value ranges, you need to create a Distribution that specifies those value ranges.

Procedure

To create a Distribution:

1. On the IMS PA primary option menu, select option 7 **Distributions**.
   The Distributions panel is displayed, showing the list of existing Distributions.
2. Either:
   - On the command line, enter NEW followed by the name of the new Distribution and optional initialization details using the following syntax:



   - On the action bar, select **File** > **New**.
     A pop-up dialog window is displayed. Enter the name of the new Distribution, and select the method of initialization as either:
     a. Based on defaults
     b. Modelled from an existing Distribution (specify the name of the model Distribution, and the data set name if other than the current data set)

```
                        New Distribution

Specify the name of the new Distribution and optional model.

Name  . . . . DS000009

Default or MODEL  . . . . 1  1. Default
                             2. MODEL (specified below)

Model  ____________________________________________________

Press Enter to create the Distribution.
Press Exit or Cancel to cancel the request.
```

Figure 87. Specifying a new Distribution

When you have specified the required fields, press Enter.

A panel is then displayed for you to view or modify the description of the Distribution and its characteristics.

Specifying Distribution characteristics

The characteristics of a Distribution are the nine range limits that appear on the vertical axis of a distribution graph.

Procedure

To define the characteristics of a Distribution:

1. On the IMS PA primary option menu, select option 7 **Distributions**.

   The Distributions panel is displayed, showing the list of existing Distributions.
2. To create a new Distribution, enter NEW on the command line; to edit an existing Distribution, enter **S** next to the Distribution.

   The Edit Distribution panel is displayed, showing the characteristics of the Distribution.
3. Edit the characteristics.

```
                        EDIT Distribution - DS000002
Command ===> ____________________________________________________________

Specify distribution options.

Description  . . . . Elapsed Time per Schedule_______

Limit Values .  .  .  .  .  .  (1) 1________ (2) 5________ (3) 10_______
                               (4) 30_______ (5) 50 ______ (6) 100______
                               (7) 300______ (8) 500______ (9) 1000_____

Limit Values Title . . . . . . Sc Mil Mic__
Limit Value Multiplier . . . . 1000_____
Limit Value Edit Mask  . . . . ZZZ.ZZ9.999_____________
```

Figure 88. Defining a Distribution

The fields in the Edit Distribution panel are:

Description
Default: IMS PA DISTRIBUTION

A descriptive title used to clarify the contents and purpose of the Distribution.

Limit Values
Default: 1, 5, 10, 30, 50, 100, 300, 500, 1000

Limit Values define the nine range-limits for the vertical axis of the graph. A tenth range is added by IMS PA to catch all values greater than the highest specified limit. If limits are to be specified, then all 9 values must be provided. The values will be sorted into ascending sequence. Limits are multiplied by the Limit Multiplier at the time of producing the graph.

Limit Values Title
Default: Sc Mil Mic (for seconds, msecs, microsecs)

Specify the title to be printed for the limit values on the vertical axis of the graph.

Limit Value Multiplier
Default: 1000

Each Limit Value is multiplied by the Limit Multiplier when producing the graph.

Limit Value Edit Mask
Default: ZZZ.ZZ9.999 or 402020204B2021204B202020

Specify an edit mask to be used when printing the limit values along the vertical axis of the graph. Two formats are accepted:

- Up to 11 characters, where any character may be specified but the following are digit-select characters: Z (zero suppression), 9 (digit mask), S (trigger start). Any other character is copied into the mask; the fill character is blank and the field is right-justified.
- Up to 12 bytes hexadecimal (represented by up to 24 characters) which will be used as the edit mask as specified in the *ESA/390 Principles of Operation*, SA22-7201.

For both formats, the number of digit-select characters (X'20' and X'21' in format 2) must be greater than zero and should be odd. If the number of digit-select characters is even, then the low order digit of the result will not be formatted.

The format of the following graph was produced by the Distribution specified in the previous figure.

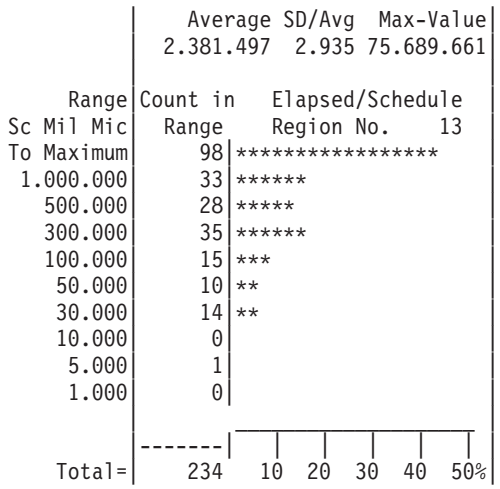


Figure 89. Distribution Graph

Distribution and Report cross-reference

Distributions do not apply to all reports. This cross-reference lists the log and monitor reports that can produce distribution graphs, with the name of the sample Distribution provided.

Table 2. Distribution and Report cross-reference

Distribution type	Sample Distribution	Report type	Report	Where Distribution is specified
Transit Time	LOGIN	Log	Transit Time Statistics	report panel
Processing (CPU) Time	$IPDIST1	Log	CPU Usage	report panel
Elapsed Time	$IPDIST2	Log	CPU Usage	report panel

Table 2. Distribution and Report cross-reference (continued)

Distribution type	Sample Distribution	Report type	Report	Where Distribution is specified
Checkpoint Duration	SYSCKPT	Log	System Checkpoint	report panel
Elapsed Time per Schedule	ELAPSCH	Monitor	Region Summary Region Detail Region Analysis PSB-TranCode Analysis	Monitor Global - Distributions Options
Elapsed Time per Call	ELAPCAL	Monitor	Region Summary Region Detail Region Analysis Exception Listing PSB-TranCode Analysis Program Trace	Monitor Global - Distributions Options
Elapsed Time per IWAIT	ELAPIWT	Monitor	Region Summary Region Detail Region Analysis Exception Listing PSB-TranCode Analysis Program Trace	Monitor Global - Distributions Options
IWAITs per Call	IWTSCAL	Monitor	Region Summary Region Detail Region Analysis Exception Listing PSB-TranCode Analysis Program Trace	Monitor Global - Distributions Options
Elapsed Time per IWAIT	IWTSUMMY	Monitor	Total System IWAIT Summary and Detail	report panel
Elapsed Time per IWAIT	DDIWELAP	Monitor	Database IWAIT Analysis	report panel
Lock IWAIT Elapsed Time	FPRCLIW	Monitor	DEDB Resource Contention	report panel
Fast Path Buffer Statistics	FPBSCNT	Monitor	Fast Path Buffer Statistics	report panel
Queue Length per Message	FPBGQLN	Monitor	BALG/Shared EMHQ Analysis	report panel
Queue Time per Message	FPBGELP	Monitor	BALG/Shared EMHQ Analysis	report panel
Active OTHREAD Counts	FPOTACT	Monitor	OTHREAD Analysis	report panel
Waiting Area	FPOTWTA	Monitor	OTHREAD Analysis	report panel
Buffers on Queue	FPOTBOQ	Monitor	OTHREAD Analysis	report panel
Line Elapsed Time	COMMELP	Monitor	Communication Summary	report panel
Line IWAIT Elapsed Time	COMMIWE	Monitor	Communication IWAIT	report panel
Received Blksize per Block	COMMLFR	Monitor	Communication Line Functions	report panel
Transmitted Blksize per Block	COMMLFT	Monitor	Communication Line Functions	report panel
Turnaround Interval	COMMLFI	Monitor	Communication Line Functions	report panel

Table 2. Distribution and Report cross-reference (continued)

Distribution type	Sample Distribution	Report type	Report	Where Distribution is specified
Queue Length per Message	MSCQLEN	Monitor	MSC Queuing	report panel
Queue Time per Message	MSCQELP	Monitor	MSC Queuing	report panel

Notes:

- The Exception Listing does not produce graphs but uses the Distribution values as thresholds.
- The name of the Distribution used in batch command input to associate the Distributions with the reports is the same name as the Sample Distribution shown in this table, with the following exceptions:

  Command Name
  Sample Distribution
  ELAP/SCH
  ELAPSCH
  ELAP/CAL
  ELAPCAL
  ELAP/IWT
  ELAPIWT
  IWTS/CAL
  IWTSCAL

Part 3. Specifying input data for reporting

You need to specify to IMS Performance Analyzer the data that you want to analyze. You can do this by defining systems and groups of systems. Then specify the files explicitly, or for IMS Log and IMS Connect data, you can use Automated File Selection to automatically locate the files in a specified period.

Chapter 12. Systems and Files

To identify the input data for reporting, you must first define your IMS subsystems, their log, monitor, and OMEGAMON TRF and ATF files and your IMS Connect systems.

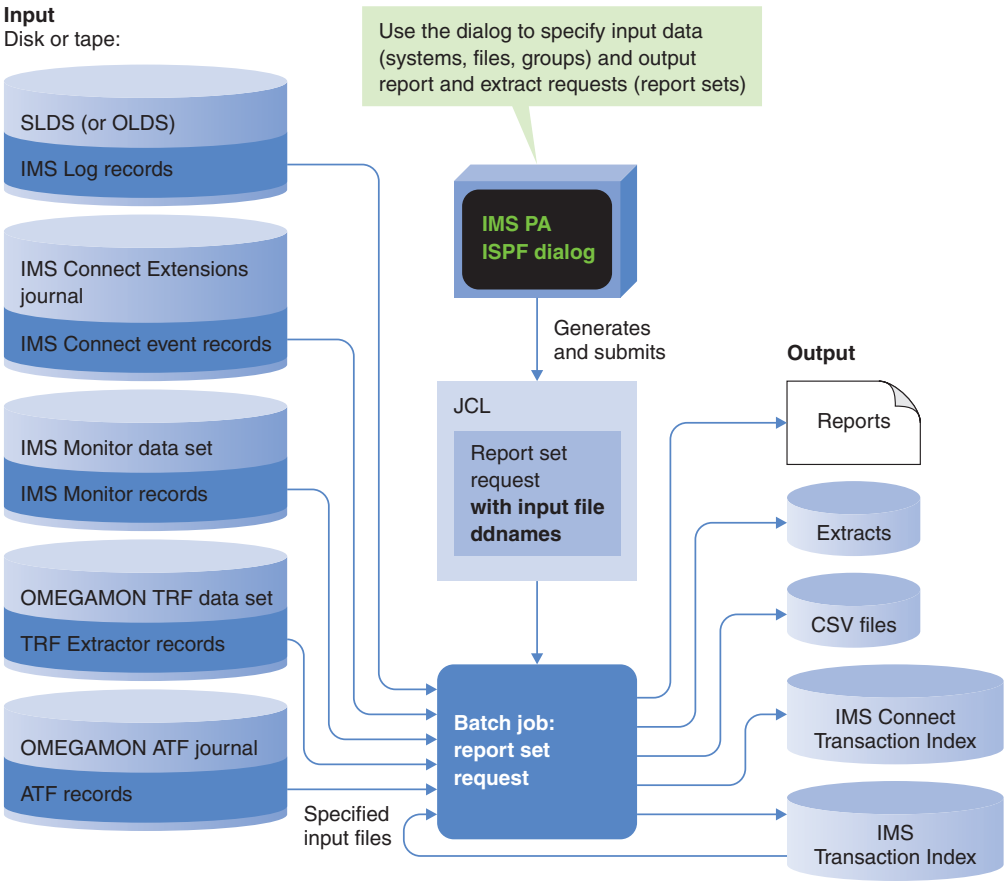


Figure 90. Reporting using explicitly specified files

Specifying IMS Log files or IMS Connect files explicitly is optional as IMS PA can use Automated File Selection to locate them. See Chapter 15, "Automated File Selection," on page 197. For shared queues log reporting, you must use Groups to define the IMS subsystems in a sysplex.

To define your IMS subsystems and associated DBRC settings, log, monitor, TRF and ATF files, and groups, use IMS PA primary option menuoption 1 **System Definitions**. Alternatively, you can select **SysDefs** in the action bar of most Report Set panels.

IMS Connect system definitions are maintained by IMS Connect Extensions in the Definitions Data Set (option 0.5 **IMS Connect Extensions Definitions Data Set**). They cannot be created or changed by IMS PA, but can be assigned to or removed from Groups. However, you can define standalone Connect systems and files if the Definitions Data Set is not available.

At run time, specify the system or Group that the Report Set is to process. IMS PA automatically generates the JCL that contains the required files (or DBRC settings).

For log reporting, the IMS version is also included in the JCL as the log data and reports are release-dependent.

Defining Systems

With System Definitions, you can define IMS subsystems and their related information from a single point.

About this task

IMS subsystems participating in a sysplex must be defined in a Group. A Group is simply a list of IMS subsystems and Connect systems that you wish to group together for reporting purposes. At Report Set run time, you can request reporting for an individual system or a Group. If your previous Log Input specified more than one IMS system that was not excluded, then IMS PA will define them to a Group called SYSPLEX1. You can assign IMS subsystems to a Group from System Definitions. To maintain your Group definitions, use option 2 **Groups** from the IMS PA primary option menu.

Procedure

Select option 1 **System Definitions** from the IMS PA primary option menu.
The Systems Definitions panel is displayed. This panel lists the systems that are available for Log, Monitor, and Connect reporting.
Scroll **Left** (**F10**) and **Right** (**F11**) to view all columns. Each listed system has the

```
  File  Edit  Options  Help
------------------------------------------------------------------------------
                              System Definitions          Row 1 of 3 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

Specify IMS and Connect systems.

/ System   Type     VRM               Description
_ I141     IMS      141  IMS V14 subsystem
_ I151     IMS      151  IMS V15 subsystem
_ IMSPAHWS Connect       IMS PA Test HWS
****************************** Bottom of data ********************************
```

Figure 91. System Definitions

following attributes.

System
The unique identifier of an IMS subsystem or IMS Connect system:

- IMS subsystem ID is a 1-4 alphanumeric character name. IMS subsystem definitions are shared by IMS PA and IMS PI (IMS Problem Investigator) and can be created or changed by both.
- IMS Connect system name is a 1-8 alphanumeric character name. Connect system definitions are maintained by IBM IMS Connect Extensions for z/OS in the Definitions Data Set (see option 0.5 **IMS Connect Extensions Definitions Data Set**). New or changed system details are maintained in IMS PA System Definitions and Groups only, they do not affect the Definitions Data Set.

The order in which the systems are specified on the panel is not relevant to IMS PA. You may list them in the order that is convenient for you.

Type **Type** refers to whether the system is an IMS subsystem (`IMS`) or a Connect system (`Connect`).

VRM **VRM** is the release of the IMS subsystem. The supported releases are 121, 131, 141, and 151.

IMS PA uses the **VRM** to perform release-dependent batch report processing.

VRM is not applicable to Connect systems.

Description
Description contains up to 36 characters of text to describe the system. This is for your reference only, although IMS PA inserts it as a comment in your Report Set JCL.

Files IMS PA sets the **Files** indicator to `Yes` or `No` as follows:

Log `Yes` indicates that the IMS Subsystem has Log files explicitly specified.

Mon `Yes` indicates that the IMS Subsystem has Monitor files explicitly specified.

CEX `Yes` indicates that the IMS Connect system has Journal data sets (archive or active) explicitly specified.

TRF `Yes` indicates that the IMS Subsystem has OMEGAMON TRF files specified.

ATF `Yes` indicates that the IMS Subsystem has OMEGAMON ATF journals specified.

Auto_File Selection
IMS PA sets the indicator for Automated File Selection to Yes or No as follows:

DBRC `Yes` indicates that RECON or MDA data sets have been specified for the IMS Subsystem making it eligible for DBRC Log Selection.

CEX `Yes` indicates that the Connect system is in the IMS Connect Extensions definitions repository and eligible for Journal File Selection.

Line actions:
The valid line actions for the list of systems are:

/ Display the menu of line actions
S Select to modify or review the system details
I Insert a blank row to define a new system of the same type
R Repeat this row
C Copy this row
M Move this row
A Move/Copy after this row
B Move/Copy before this row
D Delete this row

Note:

1. If a Connect system is deleted and it is from the IMS Connect Extensions Definitions Data Set (select option 0.5 **IMS Connect Extensions Definitions Data Set**), then the system is removed from IMS PA System Definitions and

Groups, but it is still available to IMS PA to be reassigned to a group for combined reporting (option 3 **Report Sets**) or for IMS Connect reporting (option 9 **IMS Connect**).

2. If an IMS subsystem is deleted, it is completely removed from IMS PA.
3. A row command on this panel applies to the system and all its related information. For example, copying a system will copy the system details and related files and groups.

Primary commands:

The following primary commands are available:

NEW *name type*
: This command defines a new system. You can also select this from **File** in the action bar.
  - To define a new IMS subsystem, enter `NEW name IMS` or `NEW name` or `NEW`.
  - To define a new IMS Connect system, enter `NEW name CONNECT` or `NEWC name`.

RESET
: This command (or RES) removes all pending line actions and deletes any blank rows. Reset is also available from **Edit** in the action bar.

SORT System | Type | Vrm | Description
: This command sorts the list of systems on the specified column. The default is System. The order is retained on exit.

  You can also sort by selecting a point-and-shoot column heading.

SAVE
: Save all changes to system definitions.

Note: The Save command is available from the System Definitions panel, being the top in the hierarchy of panels. **Exit** (**F3**) from a subordinate panel only temporarily retains changes. No changes are permanently saved until Save or Exit is entered into the top panel. **Cancel** (**F12**) discards all unsaved changes on this and subordinate panels.

IMS Subsystem

To define a new IMS Subsystem, type NEW on the command line of the System Definition panel.

The IMS Subsystem panel is used to specify the attributes of an IMS subsystem, its DBRC settings, log and monitor files, and groups that it belongs to. IMS PA uses this information to generate the JCL to run your Report Sets.

The panel has multiple views (affecting the bottom half of the display only):

1. **DBRC Settings**
2. **Log Files**
3. **Monitor Files**
4. **Groups**
5. **OMEGAMON TRF Files**
6. **OMEGAMON ATF Journals**

You can switch between the views by entering the number of your choice, scrolling **Right** (**F11**), or scrolling **Left** (**F10**). DBRC Settings is the initial view. For each IMS subsystem, IMS PA remembers its last view and returns there next time.

```
                                IMS Subsystem                          More: < >
Command ===> ____________________________________________________________________

IMS Subsystem definition:
 IMS Subsystem ID  . . . I151   IMS Version (VRM) . . . 151  +
 Description . . . . . . IMS version 15 subsystem
 RESLIB Data Set . . . . 'IMS.V151.SDFSRESL'
-------------------------------------------------------------------------------
Specify required view . . 1  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
-------------------------------------------------------------------------------
Specify DBRC Settings for automated log file selection:

DBRC Subsystem ID . . . _________ (Specify RSENAME for XRF)
DBRC IMSplex name . . . ____      (RECON Loss Notification)
DBRC Sharing Group ID . ___       (Parallel RECON Access)
RECON Data Set 1  . . . 'I151.V15.RECON1'
               2  . . . 'I151.V15.RECON2'
               3  . . . 'I151.V15.RECON3'
MDA Data Set  . . . . . 'I151.V15.USERLIB'

Enter "/" to select option         JES2 options:
_  Log Data Sets are Cataloged      (DBRC) Node . . ________  SYSAFF . . ____
_  Use OLDS that are not Archived   (SLDS) Node . . ________  SYSAFF . . ____
_  Use Secondary Log Data Sets
```

Figure 92. System Definitions: IMS Subsystem (with DBRC Settings)

The IMS subsystem details are:

IMS Subsystem ID
Specify the IMS subsystem identifier. An IMS ID is a 1–4 alphanumeric character name and must be unique.

IMS Version (VRM)
VRM is the release of the IMS subsystem. The supported releases are 121, 131, 141, and 151.

IMS PA uses the VRM to perform release-dependent batch report processing. IMS Version is a required field and must be kept up to date because IMS log record formats can change from version to version. IMS PA needs to ensure that it selects the correct version-dependent reporting routines for this system's log data.

Description
Description is free-format text up to 36 characters to describe the IMS subsystem. This is only for your reference. IMS PA does not use it to identify the system.

RESLIB Data Set
RESLIB data set name. For DBRC Log Selection, the RESLIB data set must contain the DBRC API routine DSPAPI00. You do not need to specify the RESLIB data set name if the modules reside in the system link list (LNKLST).

The RESLIB data set can also be used to determine the IMS version if it contains module DFSVC000. IMS PA will use the IMS version from information in module DFSVC000 instead of the VRM specified explicitly.

DBRC Settings for an IMS Subsystem

To specify the DBRC Settings that allow you to use DBRC Log Selection for Log reporting, use view 1 **DBRC Settings** of the IMS Subsystem panel.

DBRC Log Selection is a facility that you can use when submitting your report requests. It automatically selects the required Log files from DBRC for the required reporting time period, saving you the effort of manually entering the Log file data set names.

Figure 92 on page 171 shows an example of the panel used to specify DBRC settings for an IMS subsystem.

The DBRC Settings details are:

DBRC Subsystem ID
The DBRC Subsystem ID defines the DBRC Subsystem (SSID) that owns the SLDS entries. Specify DBRC Subsystem ID when the DBRC Subsystem ID is longer than 4 characters, or different to the IMS Subsystem ID.

- For IMS and DBCTL subsystems, the DBRC Subsystem ID is the IMSID value from IMSCTRL SYSGEN macro (four characters). In this case, DBRC Subsystem ID need not be specified. DBRC Log Selection uses the IMS Subsystem ID as the DBRC Subsystem ID.
- For Batch and Utility subsystems, specify the job name.
- For XRF, specify the RSENAME (Recovery Service Element) of the IMS systems (active and alternate).

DBRC IMSplex name
Specify the name of the IMSplex.

DBRC Log Selection JCL is generated with the IMSPLEX parameter:

```
// EXEC PGM=IPIDBRC,PARM='IMSPLEX=name'
```

The Group IMSplex specification is used for reporting on a group of systems.

The System IMSplex specification is used for reporting on a system, and is ignored when reporting on a group.

DBRC Sharing Group ID
Specify the DBRC group ID defined in the RECON data set used by the DBRC group.

DBRC Log Selection JCL is generated with the DBRCGRP parameter:

```
//IPIDBRC EXEC PGM=IPIDBRC,PARM='IMSPLEX=name,DBRCGRP=grp'
```

Specify IMSPLEX and DBRCGRP as you would when using the Database Recovery Control utility (DSPURX00):

```
EXEC PGM=DSPURX00,PARM='IMSPLEX=plexname.DBRCGRP=xxx,READONLY'
```

The Group DBRCGRP specification is used for reporting on a group of systems.

The System DBRCGRP specification is used when reporting on a system, and is ignored when reporting on a group.

RECON Data Set
Specify the names of the two or three RECON data sets used by this IMS

subsystem. If specified, and DBRC log selection is requested, IMS PA will use DBRC to determine from the RECON data sets the log files for input to the report processors.

The RECON data sets may be omitted if the MDA data set is specified. However, if both are specified, IMS PA will use the RECON specification after validating it against the information in the MDA.

Specification of the RECON or MDA data sets is only required for DBRC Log Selection which is an optional feature of IMS PA.

MDA Data Set

Specify the name of the MDA (MVS Dynamic Allocation) data set for this IMS subsystem.

If the RECON data set names are not specified, and DBRC log selection is requested, IMS PA will use the MDA data set to determine the RECON data set names, and in turn use DBRC to select the log files for input to the report processors.

If RECON data sets are specified, they will be validated against the MDA information.

Specification of the RECON or MDA data sets is only required for DBRC log selection which is an optional feature of IMS PA.

Log Data Sets are Cataloged

Enter **/** if the SLDS data sets are cataloged. IMS PA then omits UNIT, VOLSER, and LABEL parameters from the Report Set JCL. This prevents JCL failures when the log files are SMS-managed cataloged data sets.

Default: Not selected; Log data sets are not cataloged. IMS PA will include UNIT, VOLSER, and LABEL parameters in the Report Set JCL.

Use OLDS that are not Archived

Enter **/** to allow IMS PA to select OLDS log files that cover the requested reporting period when SLDS log files are not yet available. OLDS data sets will only be considered for selection if they are eligible for archive, but are yet to be archived.

Default: Not selected; OLDS data sets will not be used.

Use Secondary Log Data Sets

Enter **/** to use secondary SLDS data sets if they are available, instead of primary SLDS data sets.

Default: Not selected; primary SLDS data sets will be used.

JES2 options

Specify JES2 Control Statement options to run DBRC Log Selection jobs on the system where the RECONs and SLDS Log files are available.

Default: Not selected.

DBRC Node and SYSAFF

Specify JES2 Control Statement options to run DBRC Log Selection jobs on the system where the RECONs Log files are available.

Node is the network node where the job must execute, generating: `/*XEQ Node` and `/*ROUTE PRINT Node`.

SYSAFF is the system name to process the job, generating: `/*JOBPARM SYSAFF=name`.

SLDS Node and SYSAFF
Specify JES2 Control Statement options to run report jobs on the system where the SLDS Log files are available.

Node is the network node where the job must execute, generating: `/*XEQ Node` and `/*ROUTE PRINT Node`.

SYSAFF is the system name to process the job, generating: `/*JOBPARM SYSAFF=name`.

Note: The JES2 Control Statements will only be generated if they are specified in your IMS PA Settings (option 0.1 **IMS PA Settings**).

For more information on preparing for DBRC log selection, see Chapter 15, "Automated File Selection," on page 197.

Log Files for an IMS Subsystem

To specify the IMS log data sets associated with an IMS subsystem, use View 2 of the IMS Subsystem panel. This data is used by the IMS PA dialog in the generation of JCL to run log Report Sets.

However, if DBRC Log Selection is requested, the files specified on this panel are ignored as IMS PA will use DBRC to locate them based on a specified time period. See "Running reports using DBRC Log Selection" on page 202.

```
 File  Edit  Options  Help
--------------------------------------------------------------------------------
                              IMS Subsystem             Row 1 of 3 More: < >
Command ===> _____________________________________________ Scroll ===> PAGE

IMS Subsystem definition:
 IMS Subsystem ID  . . . I141   IMS Version (VRM) . . . 141  +
 Description . . . . . . IMS V14 subsystem
 RESLIB Data Set . . . . 'IMS.V141.RESLIB'
--------------------------------------------------------------------------
Specify required view . . 2  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
--------------------------------------------------------------------------
Specify the Log Files (in time sequence) for this subsystem:

/  Exc              Data Set Name (DSN)                UNIT +  SEQ VOLSER +
_    *   'I141.V141.SLDS.LOG01'                        _____   ___ ______
V    *   'I141.V141.SLDS.LOG02'                        SYSDA   ___ 000001 +
_        'I141.V141.SLDS.LOG03'                        SYSDA   ___ 000002
_ ******************************** End of list ********************************
```

Figure 93. System Definitions: IMS Subsystem (with Log Files)

Each listed data set has the following attributes:

Exc The data set is marked by a * if it is to be excluded from Log reporting. Excluded data sets are not eligible for Report Set JCL generation.

Enter the line action **X** to change (reverse) the exclude status of the data set.

Data Set Name (DSN)
Specify the name of the data set in TSO format. Data sets that are not excluded are concatenated in the Report Set JCL in the order in which they are specified on the panel.

For a report to span more than one data set, the data sets must be specified in time sequence with no large time gaps between them; otherwise for single subsystem reporting, IMS PA would build multiple reports, and for multi-subsystem shared queue reporting, the results would be unpredictable.

If the data set is not cataloged or you wish to establish overriding data set characteristics, then specify:

UNIT The device type or group name associated with the data set, such as 3390, SYSALLDA, or CART. This must represent a device that is defined in the Eligible Device Table of the current processor as either TAPE or DASD. To select one from a list of possible Units, position the cursor on the **UNIT** field and press **Prompt** (**F4**).

UNIT may be specified without a **VOLSER**, in which case the explicitly specified device type will be honored in the process of generating JCL but the `UNIT` parameter will not be included in the generated JCL. In this way the JCL generation process can be made aware of the device type of a data set that is *yet* to be cataloged, or is cataloged on another system. The device type is needed to generate the JCL for unit affinity. It also is needed to generate the JCL for shared queue merge processing when not enough tape devices are available to concurrently open the log files from all subsystems.

SEQ Data set sequence number; identifies the relative position of the data set on a tape volume. Omit, or code 0 or 1 to indicate the first data set on the tape volume.

VOLSER
The volume serial number of the data set. It is only required for uncataloged data sets.

A **+** sign indicates that the data set spans multiple volumes.

To display up to 16 volumes of the VOLSER list, do one of the following:
- Place the cursor on the **+** sign and press Enter.
- Place the cursor on the **VOLSER** field and press **Prompt** (**F4**).
- Enter the line action **V**.

Line actions:

The following line actions are valid for a data set in the list:

/ Display the menu of line actions
I Insert a null row after this row
R Repeat this row
C Copy this row
M Move this row
A Move/Copy after this row
B Move/Copy before this row
D Delete this row
U Select a Unit from a list
V Display the VOLSER list for this data set
X Reverse this row's exclude status (Excluded/Included)

Primary commands:

The following primary command is available:

RESET This command (or RES) removes all pending line actions and deletes any blank rows. You can also select Reset from Edit in the action bar.

Note: The SAVE command is not available from this panel. Changes are saved only on Save or **Exit** (**F3**) from the System Definitions panel.

Monitor Files for an IMS Subsystem

To associate monitor data sets with an IMS subsystem, use View 3 of the IMS Subsystem panel. This data is used by the IMS PA dialog in the generation of JCL to run monitor Report Sets.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
                               IMS Subsystem              Row 1 of 3 More: < >
Command ===> _____________________________________________ Scroll ===> PAGE

IMS Subsystem definition:
 IMS Subsystem ID  . . . I141   IMS Version (VRM) . . . 141  +
 Description . . . . . . IMS V14 subsystem_____________________
 RESLIB Data Set . . . . 'IMS.V141.RESLIB'_____________________________
--------------------------------------------------------------------------
Specify required view . . 3  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
--------------------------------------------------------------------------
Specify the Monitor Files (in time sequence) for this subsystem:

/  Exc               Data Set Name (DSN)                UNIT +  SEQ VOLSER +
_   *   'I140.V141.SLDS.MON01'_____________________  ________ ___ ______
X   *   'I141.V141.SLDS.MON02'_____________________  SYSDA___ ___ 000001 +
_       'I141.V141.SLDS.MON03'_____________________  SYSDA___ ___ 000002
 ********************************* End of list ********************************
```

Figure 94. System Definitions: IMS Subsystem (with Monitor Files)

This panel is similar to the Log Files panel (see Figure 93 on page 174) with the same fields, line actions, and action bar choices.

Groups for an IMS Subsystem

To specify the groups that an IMS subsystem belongs to, use View 4 of the IMS Subsystem panel. A group contains the IMS subsystems of a sysplex for shared queue processing. This data is used by the IMS PA dialog in the generation of JCL to run log Report Sets.

For further information on groups, see Chapter 13, “Defining Groups,” on page 185.

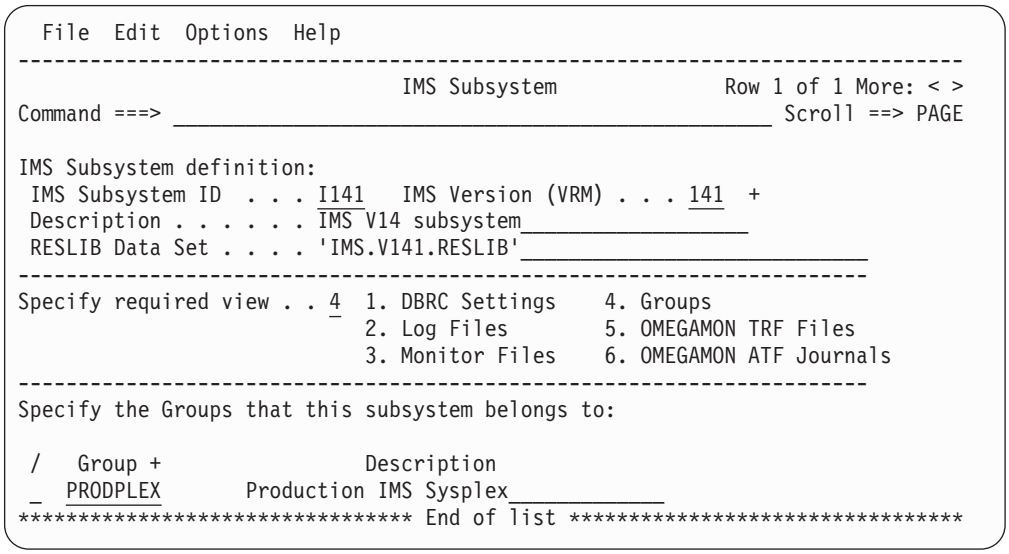


Figure 95. System Definitions: IMS Subsystem (with Groups)

Each group has the following attributes:

Group A Group name is an arbitrary name used to identify a group of related IMS subsystems for reporting purposes, such as systems belonging to a sysplex. For example, specify a Group name of PRODPLEX to identify all IMS subsystems in your production IMS sysplex. Group names can be up to eight alphanumeric (A-Z,0-9) or special (@,#,$) characters.

Description
Description is free format text up to 36 characters to describe the group of IMS subsystems. This is for your reference only, although IMS PA inserts it as a comment in your Report Set JCL.

Line actions:
The following line actions are valid against entries in the groups list:

- **/** Display the menu of line actions
- **S** Select one or more groups from a list
- **I** Insert a null row after this row
- **R** Repeat this row
- **C** Copy this row
- **M** Move this row
- **A** Move/Copy after this row
- **B** Move/Copy before this row
- **D** Delete this row

Primary commands:
The following primary commands are available:

RESET
This command (or RES) removes all pending line actions and deletes any blank rows. Reset is also available from **Edit** in the action bar.

SORT Group | Description
This command sorts the list of groups on the specified column. The default is Group. The order is retained on Exit.

You can also sort by selecting a point-and-shoot column heading.

Note: The SAVE command is not available from this panel. Changes are saved only on SAVE or **Exit** (**F3**) from the System Definitions panel.

TRF Files for an IMS subsystem

To associate TRF Extractor data sets with an IMS subsystem, use View 5 of the IMS Subsystem panel.

```
                              IMS Subsystem             Row 1 of 1 More: < >
Command ===> _____________________________________________ Scroll ===> PAGE

IMS Subsystem definition:
 IMS Subsystem ID  . . . . ICDE  IMS Version (VRM) . . . 141  +
 Description . . . . . . . TRF extractor detail & logs_________
 RESLIB Data Set . . . . . _____________________________________________
--------------------------------------------------------------------------------
Specify required view . . 5  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
--------------------------------------------------------------------------------
Specify the OMEGAMON TRF Files (in time sequence) for this collection:

/  Exc               Data Set Name (DSN)                UNIT +  SEQ VOLSER +
_       'IPI000.QADATA.TCOMG008.ICDE.TRF.DET2'_______   ________ ___ ______
****************************** Bottom of data ********************************
```

Specify the OMEGAMON TRF Extractor data set names and attributes in a similar way to IMS log and monitor data sets.

See "Log Files for an IMS Subsystem" on page 174 for a description of the fields, available line actions, and action bar choices.

Note:

- TRF files, like Monitor files, have no repository or register, and so no automated file selection based on start and stop time is available.
- Extractor files may contain data from multiple systems in an IMSPLEX. The system name in the System Definition is not used for JCL generation.
- OMEGAMON TRF Collector records are in the IMS log and as such, the IMS log data sets are specified in the usual way on the IMS log files panel. TRF Collector records can be analyzed by IMS Problem Investigator.

ATF journals for an IMS subsystem

To associate OMEGAMON ATF journal data sets with an IMS subsystem, use View 6 of the IMS Subsystem panel. This data is used by the IMS PA dialog in the generation of JCL to run ATF Report Sets.

```
  File  Edit  Options  Help
-------------------------------------------------------------------------------
                            System Definitions          Row 1 of 1 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

Select to specify input files.                    Auto_File
                          -------- Files -------   Selection
/ System   Type     VRM  Log  Mon  CEX  TRF  ATF  DBRC  CEX
S IZDX     IMS      151  Yes  No        Yes  Yes  Yes
****************************** Bottom of data ********************************
```

Specify the data set names of the OMEGAMON ATF journal files in a similar way to IMS Connect journal files.

The data sets must be cataloged. For a description of the fields, available line actions, and action bar choices, see "Journal Files for a Connect System" on page 182.

```
  File  Edit  Options  Help
-------------------------------------------------------------------------------
                                IMS Subsystem           Row 1 of 1 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

IMS Subsystem definition:
 IMS Subsystem ID  . . . . IZDX  IMS Version (VRM) . . . 151  +
 Description . . . . . . . System with ATF tracing
 RESLIB Data Set . . . . . IMS.V1510.SDFSRESL
-------------------------------------------------------------------------------
Specify required view . . 6  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
-------------------------------------------------------------------------------
Specify the Log Files (in time sequence) for this subsystem:

/  Exc              Data Set Name (DSN)                UNIT +  SEQ VOLSER +
_    *  'IZDX.OMEGATF.JOURNAL1'                        ________ ___ ______
****************************** Bottom of data ********************************
```

Note:

- ATF journals are not involved in automated file selection.
- ATF journals can contain data from multiple systems in an IMSPLEX. The system name in the System Definition is not used for JCL generation.

IMS Connect systems and data sets

Prior to using IMS PA for IMS Connect reporting, you must implement IMS Connect Extensions Event Collection.

For information about how to set up and activate Event Collection, see the *IBM IMS Connect Extensions for z/OS: User's Guide* (SC19-3632).

IMS PA analyzes and reports against the Event Collection data contained in Archive Journal data sets. To report this data, you must first identify the IMS Connect systems and data sets to IMS PA, and specify your report requests in IMS Connect Report Sets.

Note that IMS Connect systems and their Archive data sets are defined by IMS Connect Extensions, not IMS PA. IMS PA reports the event data recorded by IMS Connect Extensions, but does not provide maintenance functions for IMS Connect Extensions system definitions and Archive data sets.

To request Connect reports and extracts using the IMS PA dialog:

1. Use option 0.5 **IMS Connect Extensions Definitions Data Set** from the IMS PA primary option menu to specify the name of the IMS Connect Extensions Definitions Data Set that defines the IMS Connect Systems and Archive Data Sets that you want to report on.

```
                IMS Connect Extensions Definitions Data Set

Command ===> ____________________________________________________________

Specify the name of the IMS Connect Extensions Definitions Data Set.

Data Set Name  . . . 'CEX.REPOSTRY'_____________________________________
```

Figure 96. IMS Connect Extensions Definitions Data Set

2. Use option 3 **Report Sets** from the IMS PA primary option menu to specify your IMS Connect report requests in Report Sets of type CEX. You can enter line action **RUN** to select a Report Set, a category or an individual report for batch execution. For more information, see Chapter 24, "Requesting IMS Connect reports," on page 567.
3. Use option 9 **IMS Connect** from the IMS PA primary option menu to view the list of IMS Connect Systems and Archive Data Sets. You can enter line action **RUN** to select a system or a data set for batch reporting.

The remainder of this topic explains the functionality available from primary menu option 9 **IMS Connect**.

When you select option 9 **IMS Connect**, the list of IMS Connect systems defined in the IMS Connect Extensions Definitions Data Set is displayed.

```
                    IMS Connect System Definitions       Row 1 to 4 of 4

Command ===> ____________________________________________________________

Definitions Data Set . . : CEX.REPOSTRY

/       Name             Description                 Changed           ID
___   F1        Stats collection system 1       2018/03/25 13:46:02  PXN
___   HWSD      Test1                           2018/03/28 14:37:10  PXN
___   QA01      Test2                           2018/01/20 16:44:42  PXN
S__   TRICKLE   Stats collection system 2       2018/03/29 10:36:41  PXN
```

Figure 97. IMS Connect Systems

Two line actions are available:

- Enter line action **RUN** to run a Report Set against a particular system. The runtime options are displayed as shown in "Run Connect Report Set" on page 571. Archive Selection will be used to locate the data sets in a reporting interval that you specify at run time.
- Enter line action **S** to display the list of Archive Data Sets for the system as shown in the following panel.

```
                    Archive Data Sets for TRICKLE       Row 1 to 16 of 16

Command ===> _____________________________________________ Scroll ===> PAGE

Select Archive data set to run report.

      Data Set Name                                ----- From -----  To
___   CEX240.TEST.TRICKLE.D180323.T143727         2018-03-23 13.51  14.37
___   CEX240.TEST.TRICKLE.D180324.T095211         2018-03-23 14.37  09.52
___   CEX240.TEST.TRICKLE.D180324.T111624         2018-03-24 09.54  10.13
___   CEX240.TEST.TRICKLE.D180324.T113311         2018-03-24 11.16  11.33
___   CEX240.TEST.TRICKLE.D180324.T115845         2018-03-24 11.33  11.58
___   CEX240.TEST.TRICKLE.D180324.T120450         2018-03-24 11.58  12.04
___   CEX240.TEST.TRICKLE.D180324.T121311         2018-03-24 12.05  12.13
S     CEX240.TEST.TRICKLE.D180324.T121656         2018-03-24 12.13  12.16
___   CEX240.TEST.TRICKLE.D180324.T125935         2018-03-24 12.17  12.59
___   CEX240.TEST.TRICKLE.D180324.T130328         2018-03-24 12.59  13.03
___   CEX240.TEST.TRICKLE.D180324.T132657         2018-03-24 13.04  13.26
___   CEX240.TEST.TRICKLE.D180324.T133926         2018-03-24 13.27  13.39
___   CEX240.TEST.TRICKLE.D180324.T134154         2018-03-24 13.40  13.41
___   CEX240.TEST.TRICKLE.D180324.T140219         2018-03-24 13.45  14.02
___   CEX240.TEST.TRICKLE.D180324.T142133         2018-03-24 14.09  14.21
___   CEX240.TEST.TRICKLE.D180324.T142936         2018-03-24 14.22  14.29
****************************** End of list ******************************
```

Figure 98. IMS Connect System Archive Data Sets

Enter line action **S** (or **RUN** or **/**) to run a Report Set for a particular data set. The runtime options are displayed as shown in the following figure.

```
  File  SysDefs  Options  Help
--------------------------------------------------------------------------------
                              Run Report Set
Command ===> ____________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                        ----- Report Interval ------
 System . . . . TRICKLE                       YYYY/MM/DD  HH:MM:SS:TH
                                         From 2014/03/24  12:13:32:05
Report Selection:                        To   2014/03/24  12:16:27:88
 Report Set . . CEXAMPLE  +

Execution Mode:                          Unresolved Data Sets Options:
3  1. Submit Report Set                  1  1. Issue error message
   2. Edit JCL before submit                2. Edit unresolved JCL
   3. Edit JCL with command input
                                         Enter "/" to select option
                                         _  Bypass run-time options prompt
```

Figure 99. Run Connect Report Set for selected Archive Data Set

Notice that the selected **System** is already specified for you.

When reporting on a selected Archive data set, the **Report Interval** is optional. It defaults to the time period that is spanned by the data in that data set, but you can overtype these values, or leave blank. If blank, the entire file is processed.

When reporting on an IMS Connect System, the **Report Interval** is required so that IMS Connect Extensions Automated File Selection can locate the data sets that are relevant to that time period.

Specify the **Report Set** that you wish to run. Press **Prompt** (**F4**) from the Report Set field to select from a list of available CEX Report Sets.

Journal Files for a Connect System

To specify the Journal Files (active or archive) for a Connect system, use the **IMS Connect Extensions Journal Files** view of the Connect System panel.

This data is used by the IMS PA dialog in the generation of JCL to run Connect Report Set and select **Use specified journal files**. However, if automated file selection with DBRC Log Selection is requested, the files specified on this panel are ignored as IMS PA will use Connect Journal File Selection to locate them based on a specified time period. See "Combined IMS Log and Connect reporting" on page 197.

Each listed data set has the following attributes:

Exc The data set is marked by a * if it is to be excluded from Connect reporting. Excluded data sets are not eligible for Report Set JCL generation.

Enter the line action **X** to change (reverse) the exclude status of the data set.

Data Set Name (DSN)
Specify the name of the data set to be used as input for reporting. IMS PA uses these data set names in the JCL generation when you run a Connect Report Set and select **Use specified journal files**. The data sets must be cataloged. Data sets that are not excluded are concatenated in the Report Set JCL in the order in which they are specified on the panel.

For a report to span more than one data set, the data sets must be specified in time sequence with no large time gaps between them; otherwise for single subsystem reporting, IMS PA would build multiple reports, and for multi-subsystem shared queue reporting, the results would be unpredictable.

Specify the data set names in TSO format. Enclose fully-qualified names in quotes, otherwise your prefix will be added as the high-level qualifier.

Line actions:
The following line actions are valid for a data set in the list:

/	Display the menu of line actions
I	Insert a null row after this row
R	Repeat this row
C	Copy this row
M	Move this row
A	Move/Copy after this row
B	Move/Copy before this row
D	Delete this row
X	Reverse this row's exclude status (Excluded/Included)

Primary commands:
The following primary command is available:

RESET This command (or RES) removes all pending line actions and deletes any blank rows. You can also select Reset from **Edit** in the action bar.

Note: The SAVE command is not available from this panel. Changes are saved only on SAVE or **Exit** (**F3**) from the System Definitions panel.

Groups for a Connect System

To specify the groups that a Connect system belongs to, use the **Groups** view of the Connect System panel.

This data is used by the IMS PA dialog in the generation of JCL to run CEX Report Sets for Connect or combined IMS and Connect reporting.

For further information on groups, see Chapter 13, "Defining Groups," on page 185.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
                              Connect System            Row 1 of 1 More: < >
Command ===> ____________________________________________________ Scroll ===> PAGE

Connect System definition:
 Connect System ID . . . . HWSID9__
 Description . . . . . . . ____________________________________
 Repository  . . . . . . . ____________________________________________________
--------------------------------------------------------------------------------
Specify required view . . 2  1. IMS Connect Extensions Journal Files
                             2. Groups
--------------------------------------------------------------------------------
Specify the Groups that this system belongs to:

/  Group +              Description

_ ________   ____________________________
****************************** Bottom of data ********************************
```

Figure 100. System Definitions: Connect System (with Groups)

For a description of the attributes, line actions, and primary commands, see "Groups for an IMS Subsystem" on page 176.

Chapter 13. Defining Groups

Groups is a facility that allows you to group IMS subsystems and IMS Connect systems for reporting purposes. All IMS subsystems participating in a shared queues sysplex environment must be defined in a Group. This enables IMS PA to report end-to-end response time for your shared queues transactions. IMS PA merges the Log Files from each system and “connects” the originating system's log records to the processing system's log records to obtain a complete picture of each transaction's life cycle.

About this task

Groups are used for Log and combined (Log and Connect) reporting. Monitor and OMEGAMON TRF and ATF reporting can only process a single IMS subsystem at a time.

Groups allow you to:

- Connect IMS subsystems participating in a sysplex. Reporting on the Group can produce end-to-end response time statistics for shared queue transactions.
- Connect IMS subsystems that use data sharing. Reporting on the Group can produce consolidated database reporting.
- Connect IMS subsystems for periodical or ad hoc reporting. Reporting on the Group can produce reports for each IMS subsystem in a single run.
- Connect IMS subsystems and Connect systems to produce combined IMS and Connect Form-based reports.

Procedure

On the IMS PA primary option menu, select option 2 **Groups**. (Alternatively, you can select **SysDefs** in the action bar of a Report Set panel.) The Groups panel is displayed.
This is where you maintain your Group definitions. You can:

- Create, delete or rename a Group.
- Assign IMS systems to a Group
- Remove old systems from a Group

The Group details are:

```
                                Groups                          Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> PAGE

Specify Groups of IMS and Connect systems.
                                                      ---- IMS ----  -- Connect --
/ Group              Description                       # Auto Files   # Auto Files
_ PRODPLEX   Production IMS Sysplex                    3 Yes  Yes     0 No   No
_ TESTPLEX   Test IMS Sysplex                          2 Yes  No      1 Yes  Yes
```

Figure 101. Groups

Group A Group name is an arbitrary name used to identify a group of related IMS subsystems for reporting purposes, such as systems belonging to a sysplex. For example, specify a Group name of PRODPLEX to identify all IMS subsystems in your production IMS sysplex. Group names can be up to eight alphanumeric (A-Z,0-9) or special (@,#,$) characters.

Description
Description is free format text up to 36 characters to describe the group of IMS subsystems. This is for your reference only, although IMS PA inserts it as a comment in your Report Set JCL.

IMS Details of the IMS subsystems defined to the Group.

 # (Count)
The number of IMS subsystems defined to the Group.

Auto `Yes` indicates that all IMS Subsystems in the group are eligible for DBRC Log Selection. RECON or MDA data sets have been specified.

Tip: Use DBRC Log Selection for Group reporting. DBRC Log Selection will ensure that the Log Files for all subsystems in the Group contain data for the required reporting time interval. Refer to "Running reports using DBRC Log Selection" on page 202 to learn why using DBRC makes reporting easier.

Files `Yes` indicates that all IMS Subsystems in the Group have Log Files eligible for inclusion in Report Set JCL.

Connect
Details of the Connect systems defined to the Group.

 # (Count)
The number of IMS Connect systems defined to the Group.

Auto `Yes` indicates that all IMS Connect systems in the Group are in the IMS Connect Extensions Definitions Data Set and eligible for Journal File Selection. This applies when **Use automated file selection** is requested at run time.

Files `Yes` indicates that all IMS Connect systems in the Group have journal data sets specified in System Definitions and eligible for inclusion in report JCL. This applies when **Use specified journal files** is requested at run time.

Line actions:
The valid line actions for the list of groups are:

`/`	Display the menu of line actions
`S`	Select to modify or review the IMS Subsystems in the Group
`I`	Insert a Group
`R`	Repeat this row
`C`	Copy this row
`M`	Move this row
`A`	Move/Copy after this row
`B`	Move/Copy before this row
`D`	Delete this row

Note: A row command on this panel applies to the Group and its associated information on the subordinate panels. That is, repeating a group row also repeats the IMS subsystems for that group.

Primary commands:
The following primary commands are available:

NEW *name*
This command defines a new group. You can also select this from **File** in the action bar.

RESET This command (or RES) removes all pending line actions and deletes any blank rows. Reset is also available from **Edit** in the action bar.

SORT Group | Description
This command sorts the list of groups on the specified column. The default is Group. The order is retained on exit.

You can also sort by selecting a point-and-shoot column heading.

SAVE Save all changes to groups.

Note: The SAVE command is available from the Groups panel, being the top in the hierarchy of panels. **Exit** (**F3**) from a subordinate panel only temporarily retains changes. No changes are permanently saved until SAVE or **Exit** (**F3**) from the top panel. **Cancel** (**F12**) discards all unsaved changes on this and subordinate panels.

Assigning Systems to a Group

You can assign both IMS subsystems and Connect systems to a Group by editing an existing Group or defining a new group.

- To define a new Group, select option 2 **Groups** on the IMS PA primary option menu, and then type NEW on the command line of the Groups panel.
- To edit an existing Group, select option 2 **Groups** on the IMS PA primary option menu, and then enter line action **S** against a row on the Groups panel.

Both actions display the Group of Systems panel.

```
                              Group of Systems              Row 1 to 3 of 3
Command ===> ____________________________________________ Scroll ===> PAGE

Group . . . . . . PRODPLEX
Description . . . IMS Sysplex_____________________________

DBRC options:                    JES2 options:
 IMSPLEX . . . _____              (DBRC) Node . . ________  SYSAFF . . ____
 DBRCGRP . . . ___                (SLDS) Node . . _______   SYSAFF . . ____

                                                    --- IMS -- - Connect-
/  System + Type    VRM Description                 Auto Files Auto Files
_  IMSA     IMS     121 IMS Production System A     Yes  Yes
_  IMSB     IMS     121 IMS Production System B     No   Yes
_  IMSC     IMS     121 IMS Production System C     No   Yes
******************************** End of list ********************************
```

Figure 102. Group of Systems

From this panel, you can define a new Group by specifying a unique 1-8 character name and a description. To rename a Group, over-type the existing name.

For each Group, you can specify DBRC and JES2 options:

IMSPLEX
Specify the name of the IMSplex. DBRC Log Selection JCL is generated with the IMSPLEX parameter:

```
// EXEC PGM=IPIDBRC,PARM='IMSPLEX=name'
```

The Group IMSplex specification is used for Group report requests. The System IMSplex specification is used for System report requests, and is ignored when the System is part of a Group report request.

If multiple RECONs use this IMSplex, also specify the DBRC Sharing Group ID (**DBRCGRP**).

DBRCGRP
Specify the name of the DBRCGRP when multiple RECONs will be using the same IMSplex name.

DBRC Log Selection JCL is generated with the DBRCGRP parameter:

```
//IPIDBRC EXEC PGM=IPIDBRC,PARM='IMSPLEX=name,DBRCGRP=grp'
```

The Group DBRCGRP specification is used for reporting on a group of systems.

The System DBRCGRP specification is used when reporting on a system, and is ignored when reporting on a group.

(DBRC) Node and SYSAFF
Specify JES2 Control Statement options to run DBRC Log Selection jobs on the system where the RECONs Log files are available.

Node is the network node where the job must execute, generating: `/*XEQ Node` and `/*ROUTE PRINT Node`.

SYSAFF is the system name to process the job, generating: `/*JOBPARM SYSAFF=name`.

(SLDS) Node and SYSAFF
Specify JES2 Control Statement options to run report jobs on the system where the SLDS Log files are available.

Node is the network node where the job must execute, generating: `/*XEQ Node` and `/*ROUTE PRINT Node`.

SYSAFF is the system name to process the job, generating: `/*JOBPARM SYSAFF=name`.

Note: The JES2 Control Statements will only be generated if they are specified in dialog option 0.1 **IMS PA Settings**.

To specify the IMS subsystems and Connect systems that belong to the Group, enter the system in the **System** field or select one or more from a list of available systems. To select from a list, position the cursor on the **System** field and press **Prompt** (**F4**) or enter line action **S**.

Each system in the list has the following attributes:

System
Specify the IMS subsystem or Connect system identifier.

The order in which the systems are specified on the panel is not relevant to IMS PA. You may list them in the order that is convenient for you.

Type Type of system. The associated system can be an IMS subsystem or a Connect system.

VRM **VRM** is the release of the IMS subsystem. The supported releases are 121, 131, 141, and 151.

IMS PA uses the **VRM** to perform release-dependent batch report processing. **VRM** is only applicable to IMS subsystems.

Description
Description of the IMS subsystem for your reference only.

A group can contain IMS subsystems, IMS Connect systems, or both.

IMS For IMS systems in the group, Yes/No indicators are set as follows:

Auto `Yes` indicates that the IMS system is eligible for DBRC Log Selection, that is, it has DBRC settings (RECON or MDA data sets) specified.

Files `Yes` indicates that the IMS system has explicitly-specified log files.

Connect
For IMS Connect systems in the group, Yes/No indicators are set as follows:

Auto `Yes` indicates that the Connect system is eligible for automated journal file selection. That is, it is defined in the IMS Connect Extensions definitions repository and has at least one archive journal.

Files `Yes` indicates that the Connect system has explicitly-specified journal data sets.

Note: Although an indicator is shown for explicitly specified files, they are not used for group reporting. Group reporting is only available using batch processing when automated file selection is used to locate the files covering the requested report interval.

Chapter 14. IMS Connect systems and data sets

Prior to using IMS PA for IMS Connect reporting, you must implement IMS Connect Extensions Event Collection.

For information about how to set up and activate Event Collection, see the *IBM IMS Connect Extensions for z/OS: User's Guide* (SC19-3632).

IMS PA analyzes and reports against the Event Collection data contained in Archive Journal data sets. To report this data, you must first identify the IMS Connect systems and data sets to IMS PA, and specify your report requests in IMS Connect Report Sets.

Note that IMS Connect systems and their Archive data sets are defined by IMS Connect Extensions, not IMS PA. IMS PA reports the event data recorded by IMS Connect Extensions, but does not provide maintenance functions for IMS Connect Extensions system definitions and Archive data sets.

To request Connect reports and extracts using the IMS PA dialog:

1. Use option 0.5 **IMS Connect Extensions Definitions Data Set** from the IMS PA primary option menu to specify the name of the IMS Connect Extensions Definitions Data Set that defines the IMS Connect Systems and Archive Data Sets that you want to report on.

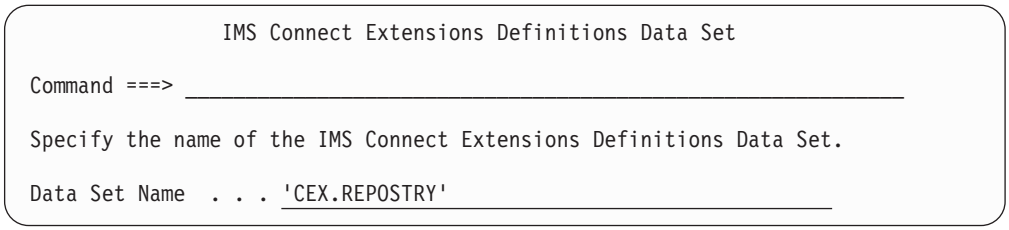


Figure 103. IMS Connect Extensions Definitions Data Set

2. Use option 3 **Report Sets** from the IMS PA primary option menu to specify your IMS Connect report requests in Report Sets of type CEX. You can enter line action **RUN** to select a Report Set, a category or an individual report for batch execution. For more information, see Chapter 24, "Requesting IMS Connect reports," on page 567.
3. Use option 9 **IMS Connect** from the IMS PA primary option menu to view the list of IMS Connect Systems and Archive Data Sets. You can enter line action **RUN** to select a system or a data set for batch reporting.

The remainder of this topic explains the functionality available from primary menu option 9 **IMS Connect**.

When you select option 9 **IMS Connect**, the list of IMS Connect systems defined in the IMS Connect Extensions Definitions Data Set is displayed.

```
                    IMS Connect System Definitions       Row 1 to 4 of 4

Command ===> ____________________________________________________________

Definitions Data Set . . : CEX.REPOSTRY

/       Name             Description                Changed           ID
___   F1        Stats collection system 1       2018/03/25 13:46:02  PXN
___   HWSD      Test1                           2018/03/28 14:37:10  PXN
___   QA01      Test2                           2018/01/20 16:44:42  PXN
S__   TRICKLE   Stats collection system 2       2018/03/29 10:36:41  PXN
```

Figure 104. IMS Connect Systems

Two line actions are available:

- Enter line action **RUN** to run a Report Set against a particular system. The runtime options are displayed as shown in "Run Connect Report Set" on page 571. Archive Selection will be used to locate the data sets in a reporting interval that you specify at run time.
- Enter line action **S** to display the list of Archive Data Sets for the system as shown in the following panel.

```
                   Archive Data Sets for TRICKLE       Row 1 to 16 of 16

 Command ===> _____________________________________ Scroll ===> PAGE

 Select Archive data set to run report.

       Data Set Name                              ----- From -----  To
 ___   CEX240.TEST.TRICKLE.D180323.T143727        2018-03-23 13.51  14.37
 ___   CEX240.TEST.TRICKLE.D180324.T095211        2018-03-23 14.37  09.52
 ___   CEX240.TEST.TRICKLE.D180324.T111624        2018-03-24 09.54  10.13
 ___   CEX240.TEST.TRICKLE.D180324.T113311        2018-03-24 11.16  11.33
 ___   CEX240.TEST.TRICKLE.D180324.T115845        2018-03-24 11.33  11.58
 ___   CEX240.TEST.TRICKLE.D180324.T120450        2018-03-24 11.58  12.04
 ___   CEX240.TEST.TRICKLE.D180324.T121311        2018-03-24 12.05  12.13
 S__   CEX240.TEST.TRICKLE.D180324.T121656        2018-03-24 12.13  12.16
 ___   CEX240.TEST.TRICKLE.D180324.T125935        2018-03-24 12.17  12.59
 ___   CEX240.TEST.TRICKLE.D180324.T130328        2018-03-24 12.59  13.03
 ___   CEX240.TEST.TRICKLE.D180324.T132657        2018-03-24 13.04  13.26
 ___   CEX240.TEST.TRICKLE.D180324.T133926        2018-03-24 13.27  13.39
 ___   CEX240.TEST.TRICKLE.D180324.T134154        2018-03-24 13.40  13.41
 ___   CEX240.TEST.TRICKLE.D180324.T140219        2018-03-24 13.45  14.02
 ___   CEX240.TEST.TRICKLE.D180324.T142133        2018-03-24 14.09  14.21
 ___   CEX240.TEST.TRICKLE.D180324.T142936        2018-03-24 14.22  14.29
****************************** End of list ******************************
```

Figure 105. IMS Connect System Archive Data Sets

Enter line action **S** (or **RUN** or **/**) to run a Report Set for a particular data set. The runtime options are displayed as shown in the following figure.

```
  File  SysDefs  Options  Help
--------------------------------------------------------------------------------
                              Run Report Set
Command ===> ____________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                          ----- Report Interval ------
 System . . . . TRICKLE                         YYYY/MM/DD  HH:MM:SS:TH
                                           From 2014/03/24  12:13:32:05
Report Selection:                          To   2014/03/24  12:16:27:88
 Report Set . . CEXAMPLE  +

Execution Mode:                            Unresolved Data Sets Options:
3  1. Submit Report Set                    1  1. Issue error message
   2. Edit JCL before submit                  2. Edit unresolved JCL
   3. Edit JCL with command input
                                           Enter "/" to select option
                                           _  Bypass run-time options prompt
```

Figure 106. Run Connect Report Set for selected Archive Data Set

Notice that the selected **System** is already specified for you.

When reporting on a selected Archive data set, the **Report Interval** is optional. It defaults to the time period that is spanned by the data in that data set, but you can overtype these values, or leave blank. If blank, the entire file is processed.

When reporting on an IMS Connect System, the **Report Interval** is required so that IMS Connect Extensions Automated File Selection can locate the data sets that are relevant to that time period.

Specify the **Report Set** that you wish to run. Press **Prompt** (**F4**) from the Report Set field to select from a list of available CEX Report Sets.

Run Connect Report Set

The IMS PA dialog generates the JCL for batch report processing. From the IMS Connect System Definitions panel, enter the RUN command to select an IMS Connect System or Archive data set for reporting.

About this task

The following figure shows an example of how to request System reporting.

```
                    IMS Connect System Definitions       Row 1 to 4 of 4

Command ===> ____________________________________________________________

Definitions Data Set . . : CEX.REPOSTRY

/       Name             Description                 Changed           ID
___   F1        Stats collection system 1       2018/03/25 13:46:02  PXN
RUN   HWSD      Test1                           2018/03/28 14:37:10  PXN
___   QA01      Test2                           2018/01/20 16:44:42  PXN
___   TRICKLE   Stats collection system 2       2018/03/29 10:36:41  PXN
```

Figure 107. RUN Connect System

Before IMS PA generates the JCL, the Run Report Set panel is displayed to prompt you to specify runtime options.

```
                              Run Report Set
Command ===> ____________________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                        ----- Report Interval ------
 System . . . . HWSD                          YYYY/MM/DD  HH:MM:SS:TH
                                         From __________  ___________
Report Selection:                        To   __________  ___________
 Report Set . . ________  +

Execution Mode:                          Unresolved Data Sets Options:
3  1. Submit Report Set                  1  1. Issue error message
   2. Edit JCL before submit                2. Edit unresolved JCL
   3. Edit JCL with command input
                                         Enter "/" to select option
                                         _  Bypass run-time options prompt
```

Figure 108. Run Connect Report Set for selected IMS Connect System

Specify your desired runtime options. When the specification is complete, press Enter to proceed with JCL generation.

Note that the selected Connect System is already specified for you. Specify the Report Set that you want to report against. Press **Prompt** (**F4**) from the **Report Set** field to select from a list of available CEX Report sets.

The fields on the Run Report Set panel are:

System Selection
The IMS Connect System that you want to report on. IMS PA builds the JCL using the Archive Data Sets defined for this system in the IMS Connect Extensions Definitions Data Set that you specified in your Profile Options.

When the run request is invoked from an IMS Connect System or Archive Data Set, the system name is protected and cannot be overtyped.

Report Selection
Specify the name of a Connect Report Set that defines the report requests that you want to run.

Type the name directly or press Prompt (F4) to select from a list of available CEX Report Sets.

Report Interval
When reporting on an IMS Connect System, the Report Interval is required so that IMS Connect Extensions Automated File Selection can locate the data sets that are relevant to that time period. When reporting on a specific Archive Data Set, the Report Interval is optional.

Default: As previously saved. However, if reporting on a specific Archive Data Set, the From and To date/time fields are primed with the time stamps of the first and last records of the data set. You can overtype these values or leave blank. If blank, the entire file is processed.

The Report Interval allows selection of a subset of the input data for passing to the report processors. Records with time stamps on or after the From date/time and before the To date/time are selected for processing.

Reducing the time period can significantly reduce processing time for generating the reports in the Report Set.

Date can be either a calendar date or a relative date. Calendar dates must conform to your **Preferred Date Format** in Profile Options. Relative dates are specified as 0, -1, -2, ... to signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. If both From and To dates are specified, they must be in the same format.

Time is optional. If From time is not specified, it defaults to the start of the day. If Stop time is not specified, it defaults to the end of the day. Time is expressed as *hh*:*mm*:*ss*:*th* for hours, minutes, seconds, tenths and hundredths of a second using colon delimiters.

The date/time range is generated as parameter input in the JCL:

- For IMS Connect Extensions Automated File Selection:

```
//IPIPARM DD *
  FROM=(yyyy/mm/dd,hh:mm:ss:th)
  TO=(yyyy/mm/dd,hh:mm:ss:th)
```

  or

```
//IPIPARM DD *
  FROM=(-nnn,hh:mm:ss:th)
  TO=(-nnn,hh:mm:ss:th)
```

- For IMS Connect Extensions Automated File Selection and Report Set processing:

```
//IPIOPTS DD *
  IMSPACEX START(yyyy/mm/dd,hh:mm:ss:th),
           STOP(yyyy/mm/dd,hh:mm:ss:th)
```

  or

```
//IPIOPTS DD *
  IMSPACEX START(-nnn,hh:mm:ss:th),
           STOP(-nnn,hh:mm:ss:th)
```

Execution Mode

Specify whether to execute the Report Set or generated commands, and whether you want to edit the JCL before submit. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling or ad hoc report requests.

Default: Set by the command (RUN, SUB, JCL, JCM) that invoked this panel.

The options are:

1. Submit the Report Set. Same as the SUBMIT or SUB command. This directly submits a batch job to execute the Report Set. The Report Set JCL contains the statements:

```
//IPIRSET  DD DSN=ReportSets.DSN(ReportSetName),DISP=SHR
//IPIOBJL  DD DSN=ObjectLists.DSN,DISP=SHR
//IPIFORM  DD DSN=ReportForms.DSN,DISP=SHR
```

2. Edit JCL before submit. Same as the JCL command. This generates the same JCL as SUBMIT, but allows you to edit it.
3. Edit JCL with command input. Same as the JCLCMD or JCM command. This generates JCL in which the Report Set, and any Object Lists and Distributions it uses, are converted to a stream of commands and displayed to allow you to edit them. For a Connect Report Set, the JCL contains the statements:

```
//IPICMD  DD *
        IMSPACEX     ...,
                     INCL|EXCL(...),...
        IMSPACEX     EXECUTE
```

Note that when you enter RUN at the report-level as a line action or override, option 3 is the only option available to you.

Chapter 15. Automated File Selection

DBRC Log Selection is a facility of IMS PA that uses DBRC to automate the selection the log files for report processing.

This facility offers an alternative to having to explicitly specify log input files. Simply specify the time period for which log reporting is required, and IMS PA will use DBRC to select the SLDS files covering that time period.

DBRC Log Selection can be used as:
- An alternative to specifying log input file names prior to report submission
- A facility to generate report JCL for submission by an automated job scheduler

Related concepts:

"Automated job scheduling" on page 132
IMS PA reports can be run on a daily basis using an automated job scheduler.

Combined IMS Log and Connect reporting

By reporting against a Group of IMS and Connect systems, you can get a complete end-to-end transit picture of IMS Connect transactions. This facility is only available to Form-based Connect List and Summary reports and extracts.

Figure 109 illustrates how IMS PA uses automated file selection to locate the files that are relevant to the specified systems and report period.

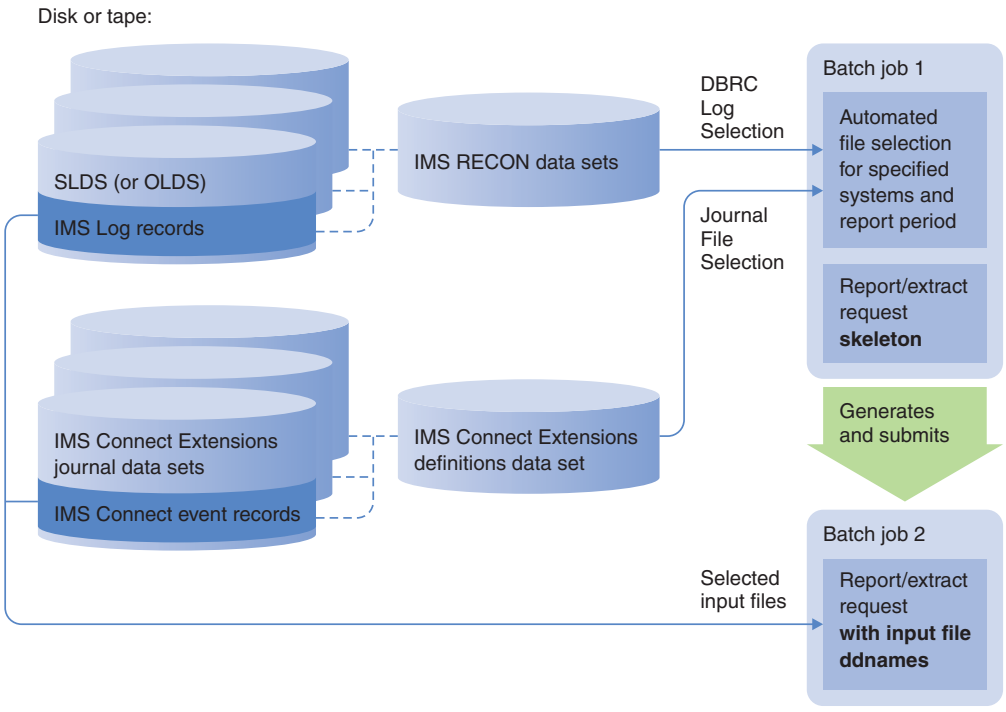


Figure 109. Automated file selection for reports and extracts

Automated file selection employs the following utilities:

1. DBRC Log Selection to locate the relevant log files for the specified IMS systems. For more information, see Chapter 15, “Automated File Selection,” on page 197.
2. IMS Connect Extensions Automated File Selection to locate the relevant journal data sets (archive or active) for the specified IMS Connect systems. For more information, see “IMS Connect Extensions Journal File Selection” on page 210.

Sample JCL: Combined IMS and Connect reporting

This JCL is produced when you run a CEX Report Set against a group of IMS and Connect systems.

```
//IMSPA JOB (ACCOUNT),'NAME'
//IPIDBRC  EXEC PGM=IPIDBRC
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//SYSUDUMP DD  SYSOUT=*
//SYSPRINT DD  SYSOUT=*
//IPIPRINT DD  SYSOUT=*
//IPIRDR   DD  SYSOUT=(A,INTRDR)
//IPIWRK1  DD  SPACE=(CYL,(1,1,1)),UNIT=SYSDA
//IPIWRK2  DD  SPACE=(CYL,(3,1)),UNIT=SYSDA
//CEXDEF   DD  DSN=CEX.REPOSTRY,DISP=SHR  1
//SYSIN    DD  SPACE=(CYL,(1,1)),UNIT=SYSDA
//IPIPARM  DD *
FROM=(2018/01/10,02:24:00:00)
TO=(2018/02/15,02:59:00:00)
IMSID=ICD0
  VRM=151
  CAT=YES
  OLDS=YES  2
  RESLIB=IMS.V151.SDFSRESL
  RECON1=ICD0.V151.RECON1.D180106
  RECON2=ICD0.V151.RECON2.D180106
  RECON3=ICD0.V151.RECON3.D180106
IMSID=ICD1
  VRM=151
  CAT=YES
  OLDS=YES  2
  RESLIB=IMS.V151.SDFSRESL
  RECON1=ICD1.V151.RECON1.D180106
  RECON2=ICD1.V151.RECON2.D180106
  RECON3=ICD1.V151.RECON3.D180106
HWSID=HWSCEX1  3
HWSID=HWSCEXA  3
/*
//IPISKEL  DD DATA,DLM=$$
//IMSPA JOB (ACCOUNT),'NAME'
//IPI      EXEC PGM=IPIMAIN,PARM='V151'
//STEPLIB  DD DSN=IMSPA.V440.SIPILINK,DISP=SHR
//SYSPRINT DD SYSOUT=*
//IPICMD   DD *
 IMSPALOG IGNORSEQ,LOG,EXEC
/*
//IPISMQW1 DD DISP=SHR,DSN=IPI.$$$.PUNCH
$$
```

Figure 110. JCL for automated file selection: combined reporting

1 The CEXDEF DD statement is required to obtain the IMS Connect Extensions journal data set names. Only one IMS Connect Extensions definitions data set is allowed.

2 OLDS=YES identifies that OLDS data sets may be required for this IMS subsystem. This must be specified for each IMSID where OLDS selection is being requested.

3 HWSID=*cccccccc* identifies an IMS Connect system within the CEXDEF repository. Multiple HWSID systems can be specified, but they must be contained in the CEXDEF repository. IMS Connect Extensions Automated File Selection utility will locate the journal files for this system that are applicable to the requested report period.

Preparing for DBRC Log Selection

Before you can use DBRC Log Selection, you need to define IMS subsystems to IMS PA. After this step, you can submit reports without having to return to System Definitions to specify log input files.

About this task

Security note: The IMSPLEX authorization exit IPIUAUTH ensures that the DBRC Log Selection utility IPIDBRC always uses the correct IMSPLEX identification settings. An incorrect `EXEC PARM='IMSPLEX=xxxxx,DBRCGRP=xxx'` specification can inadvertently cause DBRC to change control information in the RECON data sets and disrupt IMS. As a safeguard, consider installing the Request Authorization Exit for IMSPLEX security. See the authorization exit and associated install JCL supplied in the sample library, and "Authorization Exit for IMSPLEX security" on page 747.

Procedure

To prepare for using DBRC Log Selection:

1. From the Primary Option menu, select option **1 System Definitions** to display the table of your IMS subsystems.

   For the first time user, no IMS subsystems will be defined. For a user upgrading from an earlier IMS PA release, your IMS subsystems should already be defined.
2. Enter the line action **S** against the IMS subsystem that is to use DBRC Log Selection. To go to the IMS Subsystem view that displays the DBRC Settings, enter View number 1 or use the Right or Left function keys.

```
                              IMS Subsystem                          More: < >
Command ===> ____________________________________________________________________

IMS Subsystem definition:
 IMS Subsystem ID  . . . I151   IMS Version (VRM) . . . 151  +
 Description . . . . . . IMS version 15 subsystem
 RESLIB Data Set . . . . 'IMS.V151.SDFSRESL'
------------------------------------------------------------------------
Specify required view . . 1  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
------------------------------------------------------------------------
Specify DBRC Settings for automated log file selection:

DBRC Subsystem ID . . . _________ (Specify RSENAME for XRF)
DBRC IMSplex name . . . ____      (RECON Loss Notification)
DBRC Sharing Group ID . ___       (Parallel RECON Access)
RECON Data Set 1  . . . 'I151.V15.RECON1'
               2  . . . 'I151.V15.RECON2'
               3  . . . 'I151.V15.RECON3'
MDA Data Set  . . . . . 'I151.V15.USERLIB'

Enter "/" to select option         JES2 options:
_  Log Data Sets are Cataloged      (DBRC) Node . . ________  SYSAFF . . ____
_  Use OLDS that are not Archived   (SLDS) Node . . ________  SYSAFF . . ____
_  Use Secondary Log Data Sets
```

3. Enter the IMS subsystem details. For detailed information, refer to "DBRC Settings for an IMS Subsystem" on page 172.

   IMS Subsystem ID
   The unique identifier of the IMS subsystem.

   IMS Version (VRM)
   IMS Version. IMS PA supports IMS versions 121, 131, 141, and 151.

   RESLIB Data Set
   RESLIB data set name. For DBRC Log Selection, the RESLIB data set must contain the DBRC API routine DSPAPI00. You do not need to specify the RESLIB data set name if the modules reside in the system link list (LNKLST).

   The RESLIB data set can also be used to determine the IMS version if it contains module DFSVC000. IMS PA will use the IMS version from information in module DFSVC000 instead of the VRM specified explicitly.

   DBRC Subsystem ID
   The DBRC Subsystem ID defines the DBRC Subsystem (SSID) that owns the SLDS entries.

   Specify DBRC Subsystem ID when the SSID is longer than 4 characters or different to the IMS Subsystem ID.

   - For IMS and DBCTL subsystems, the DBRC Subsystem ID is the IMSID value from IMSCTRL SYSGEN macro (four characters). In this case, DBRC Subsystem ID need not be specified. DBRC Log Selection uses the IMS Subsystem ID as the DBRC Subsystem ID.
   - For Batch and Utility subsystems, specify the job name.
   - For XRF, specify the RSENAME (Recovery Service Element) of the IMS Subsystems (active and alternate).

DBRC IMSplex name
Specify the name of the IMSplex.

DBRC Log Selection JCL is generated with the IMSPLEX parameter:

```
//IPIDBRC EXEC PGM=IPIDBRC,PARM='IMSPLEX=name'
```

The Group IMSplex specification is used for reporting on a group of systems.

The System IMSplex specification is used for System report requests, and is ignored when the System is part of a Group report request.

If multiple RECONs use this IMSplex, also specify the DBRC Sharing Group ID (DBRCGRP).

DBRC Sharing Group ID
Specify the DBRC group ID defined in the RECON data set used by the DBRC group.

DBRC Log Selection JCL is generated with the DBRCGRP parameter:

```
//IPIDBRC EXEC PGM=IPIDBRC,PARM='IMSPLEX=name,DBRCGRP=grp'
```

Specify IMSPLEX and DBRCGRP as you would when using the Database Recovery Control utility (DSPURX00):

```
EXEC PGM=DSPURX00,PARM='IMSPLEX=plexname.DBRCGRP=xxx,READONLY'
```

The Group DBRCGRP specification is used for reporting on a group of systems.

The System DBRCGRP specification is used when reporting on a system, and is ignored when reporting on a group.

RECON Data Set 1,2,3
The DBRC RECON data set names used by this IMS subsystem. DBRC requires at least two RECON data set names to be specified. The RECON data set names can be omitted if the MDA data set is specified.

MDA Data Set
The IMS MDA (MVS Dynamic Allocation) data set for this IMS subsystem. If the RECON data set names are not specified, IMS PA uses the MDA data set to determine the RECON data set names.

Log Data Sets are Cataloged
If the SLDS data sets are not cataloged, IMS PA will include UNIT, VOLSER, and LABEL parameters in the Report Set JCL. If cataloged, the parameters will be omitted.

It is recommended that if your IMS online systems use MDA to dynamically allocate the RECON data sets, then MDA should also be used for IMS PA.

IMS PA ensures RECON data set integrity by:

- Using the DBRC API routine DSPAPI00.
- Ensuring that there is no data set name conflicts between RECON and MDA specifications.

Sometimes, it is not possible to allow users to have access to the DBRC RECON data sets, because the enqueue issued by the DBRC Utility can cause your IMS online system to wait. If this is a problem, take a copy of your live RECON data sets and instruct IMS PA to use the copies by specifying the RECON copy data set names explicitly. For an example of how to do this, see "DBRC Log Selection using RECON copy data sets" on page 207.

Note that IMS V10 introduced a READONLY parameter which IMS PA uses to avoid the enqueue.

4. After you have completed updating the subsystem information, exit the IMS Subsystem panel. You will notice that the DBRC indicator for the subsystem is set to `Yes`. This indicates that the IMS subsystem is eligible for report submission using DBRC Log Selection.
5. Repeat steps 2 to 4 for each IMS subsystem that will use DBRC Log Selection.
6. Optionally, specify the DASD Work File Unit name. If your system does not have a default DASD Unit Name, such as SYSDA, then you will need to specify a unit name in your settings, otherwise you can use the system default. DBRC Log Selection uses temporary DASD work files when retrieving Log file details via DBRC. From the Primary Option menu, select option 0.1 **IMS PA Settings**. Specify the DASD Work File Unit Name for your system.

   This completes the setup for DBRC Log Selection, and you are now ready to submit extract, CSV, or report JCL using this facility.

Running reports using DBRC Log Selection

After you have specified your IMS subsystem DBRC definitions in System Definitions, you can submit report JCL using DBRC Log Selection. Submitting Report Sets using DBRC Log Selection is the same as when using explicit Log files, except you must specify a date/time range for reporting. This enables IMS PA to select the correct Log files for this time period.

Procedure

1. From the IMS PA primary option menu, select option 3 **Report Sets**. Prepare your Report Sets in the usual way. For details on how to do this, see Chapter 7, “Report Sets,” on page 123.
2. Enter the RUN command to run your Report Set. The Run Report Set panel is displayed.
3. From the Run Report Set panel, specify the required **Report Interval**.

   The date can be specified as a relative date to the current date. This indicates that when DBRC is asked to select the Log files for processing, files will be selected for the day relative to the current date. Thus, `0` means select Log files for today, `-1` yesterday, `-2` two days ago, and so on. By using relative dates, report JCL can be saved into a data set for automated job scheduling, and the JCL will never need to be updated.

   The date/time range specified here at submission time overrides the Global Report Interval time range specified in the Report Set or batch commands.
4. Optionally, change your **System Selection** to report against another IMS subsystem or Group.
5. For Log Selection Options, select 2 **Use DBRC to select log files**.
6. Optionally, change **Unresolved Data Set Options** to issue an error message or continue to create the JCL with missing files marked `<unresolved>`.
7. Optionally, change **Execution Mode** to instruct IMS PA how to build the report JCL. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling, or ad hoc report requests.
8. To redirect output to the IMS Tools Knowledge Base, select **Write to the ITKB repository** and specify the ITKB server name.
9. Press Enter to complete the request. IMS PA constructs the JCL according to your requirements.

For the SUBMIT command, IMS PA submits the Report JCL (assuming no missing data sets). For the JCL or JCLCMD commands, IMS PA presents the Report JCL in ISPF edit.

DBRC Log Selection utility

IMS PA DBRC Log Selection is performed in batch by the DBRC Log Selection Utility, IPIDBRC. Report JCL built by the dialog when DBRC Log Selection is used differs from Report JCL for explicitly specified log files.

Using DBRC Log Selection causes IMS PA to execute two jobs:

1. The DBRC Log Selection Utility, which invokes DBRC to select Log files.
2. Report processing, submitted by the DBRC Log Selection Utility.

The DBRC Log Selection JCL is a single step job whose JCL is constructed from the options specified in the dialog.

The DBRC Log Selection Utility performs the following tasks:

- Selects the Log files for processing, by invoking DBRC.
- Constructs the Report JCL, appending Log file DD statements at the end of the Report JCL skeleton or after a work file (IPISMQW1) DD card. This allows the JCL skeleton to be multistep. The dialog generates the JCL with the IPISMQW1 DD statement. DBRC log selection discards it if no merge is required, or replicates it, incrementing the last character if multiple merge work data sets are required.
- Submits the constructed Report JCL.

The execution of the Report Set (or batch commands) takes place in a second job, submitted by the DBRC Log Selection Utility.

Splitting Log selection and Report processing into two jobs enables IMS PA to avoid dynamic allocation of Log files on tape devices. Leaving allocation of tape devices to JES or the initiator avoids potential job failures.

Report Set JCL using DBRC Log Selection

The JCL built by IMS PA for the batch execution of DBRC Log Selection and Reporting is based on the sample library member IPILDBRC.

DBRC Log Selection performs the following tasks:

- Selects the Log files for processing, by invoking DBRC
- Constructs the Report JCL
- Submits the Report JCL

Execution parameters are passed to the DBRC Log Selection utility in DDname IPIPARM:

FROM=(*yyyy***/***mm***/***dd***,***hh***:***mm***:***ss***:***th***)**

Reporting start date/time. Date is required, and can be an actual date specification, or a relative date. Relative dates are specified as 0, -1, -2,.... and signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. Time is optional, and if not specified, defaults at run time to the start of the day.

TO=(*yyyy/mm/dd,hh:mm:ss:th***)**
Reporting end date/time. Date is required, and must be in the same format as the FROM specification. Time is optional, and if not specified, defaults to the end of the day.

TAPES=*nn*
Number of tape/cartridge devices available to IMS PA for report processing. TAPES is only required when processing log input for multiple IMS subsystems in a sysplex, and only then when there are more IMS subsystems than tape devices available. IMS PA supports up to 35 tape devices.

HWSID=*cccccccc*
IMS Connect system ID. The name of an IMS Connect system submitted for reporting. Multiple statements may be specified for reporting on a group of systems

IMSID=*ssss*
IMS subsystem ID.

For sysplex processing, multiple subsystems may be specified. The following parameters must be preceded by an IMSID specification, and apply to that subsystem:

SSID=*subsysid*
The DBRC subsystem (SSID) that owns the SLDS entries. Specify the DBRC subsystem ID when the SSID is longer than 4 characters or different to the IMS subsystem ID.

For IMS and DBCTL subsystems, the DBRC subsystem ID is the IMSID value from the IMSCTRL SYSGEN macro. In this case, you can leave the DBRC subsystem ID blank, then IMS PA DBRC Log Selection will use the IMS subsystem ID as the DBRC subsystem ID.

For batch and utility subsystems, specify the job name.

For XRF, specify the RSENAME of the IMS subsystems.

VRM=*vrm*
IMS version. IMS PA supports IMS versions 121, 131, 141, and 151.

CAT=YES | NO
Whether the log data sets are cataloged. If not, IMS PA will include UNIT, VOLSER, and LABEL parameters in the Report Set JCL.

OLDS=NO | YES
Whether to use OLDS data sets in the event that SLDS files are not available for the requested reporting time period.

SLDS=SEC | PRI
Specify SEC to use secondary SLDS data sets (if they are available) instead of primary SLDS data sets. Specify PRI to only use primary SLDS data sets.

RESLIB=*dsname*
IMS RESLIB data set. The DBRC API routine DSPAPI00 must reside in this data set.

RECON1=*dsname*
First RECON data set name.

RECON2=*dsname*
Second RECON data set name. DBRC requires at least two RECON data sets to be specified.

RECON3=*dsname*
Third RECON data set name.

MDA=*dsname*
MDA (MVS Dynamic Allocation) data set name. The RECON MDA members must reside in this data set. Explicit RECON data set name specification is not required if MDA is specified.

IMS PA builds the JCL to execute the DBRC Log Selection utility IPIDBRC using the following options specified from the dialog.

JOB **Job Statement Information** in IMS PA Settings.

EXEC PGM=IPIDBRC[,PARM='IMSplex=*name***[,DBRCGRP=***grp***]']**
Execute the DBRC Log Selection utility.

If the RECON data sets that you want to use belong to an IMSplex:

- Specify the name of the IMSplex in the PARM parameter. This is generated from the IMS Subsystem **DBRC IMSplex name**.
- The structured call interface (SCI) address space must be running on the system on which you want to run the automated file selection utility.

Specify the **DBRC Sharing Group ID** (DBRCGRP) defined in the RECON data set used by the DBRC group.

STEPLIB DD
IMS PA Load Library and optionally **User Program Load Library** in IMS PA Settings.

SYSPRINT DD
Message output file for the DBRC API routine DSPAPI00.

IPIPRINT DD
IMS PA DBRC Log Selection message output file.

IPIRDR
Internal Reader file. IMS PA submits Report Set JCL to this file after DBRC Log Selection has completed.

IPIWRK1
Work file PDS.

IPIWRK2
Work file data set.

SYSIN DD
Work file data set.

IPIPARM DD *
DBRC Log Selection parameter input.

IPISKEL DD
Log Report JCL skeleton. IPISKEL contains the Report Set JCL, without the log input files specified.

CEXDEF DD
IMS Connect Extensions Definitions Data Set specified in your Profile Options. This data set contains the IMS Connect Extensions system definitions.

Sample JCL with DBRC Log Selection: Log Report Set

The following JCL is produced when you run a Report Set using DBRC to select the log files.

```
//IMSPA JOB (ACCOUNT),'NAME'
//*
//* IMS PA Report Set SAMPLOG - Sample Log Report Set
//*
//IPIDBRC  EXEC PGM=IPIDBRC
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//SYSUDUMP DD  SYSOUT=*
//SYSPRINT DD  SYSOUT=*
//IPIPRINT DD  SYSOUT=*
//IPIRDR   DD  SYSOUT=(A,INTRDR)
//IPIWRK1  DD  SPACE=(TRK,(1,1,1)),UNIT=SYSDA
//IPIWRK2  DD  SPACE=(TRK,(3,1)),UNIT=SYSDA
//SYSIN    DD  SPACE=(TRK,(3,1)),UNIT=SYSDA
//IPIPARM  DD  *
FROM=(2018/02/25,09:00:00:00)
TO=(2018/02/25,16:00:00:00)
IMSID=IMSB
  VRM=151
  CAT=NO
  OLDS=NO  1
  RESLIB=IMS.V151.SDFSRESL
  RECON1=IMSB.V151.RECON1.D180114
  RECON2=IMSB.V151.RECON2.D180114
  RECON3=IMSB.V151.RECON3.D180114
  MDA=IMS.MDALIB
/*
//IPISKEL  DD  DATA,DLM=$$
//IMSPA JOB (ACCOUNT),'NAME'
//*
//* IMS PA Report Set SAMPLOG - Sample Log Report Set
//*
//IPI      EXEC PGM=IPIMAIN,PARM='V151'
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Sysout data set
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//IPICMD    DD *
  IMSPALOG IGNORSEQ,LOG,EXEC
//*  Report Set
//IPIRSET  DD  DSN=IMSPA.V440.RSET(SAMPLOG),DISP=SHR
//IPISMQW1 DD  DISP=(NEW,DELETE,DELETE),
//             UNIT=SYSDA,SPACE=(CYL,(100,20),RLSE)  2
$$
```

Figure 111. JCL for DBRC Log Selection: Log Report Set

1 `OLDS=YES` added to the sub parameters of an IMSID identifies that OLDS data sets may be required. This must be specified for each IMSID where OLDS selection is being requested.

`OLDS=YES` is used when the date and time specified in the TO parameter is beyond the last IMS log available. The selection process then looks for OLDS data sets that are eligible for archive (but are yet to be archived) and that are within the time range, and adds them to the created JCL.

`OLDS=NO` specifies that the OLDS data sets will not be selected even if the IMS logs do not cover the complete time range requested. This is the default.

2 Specify the DCB attributes for allocating the Shared Queue Merge Work File in your profile options 0.3 **Shared Queue Settings** (see Figure 14 on page 74).

DBRC Log Selection using RECON copy data sets

IMS PA uses the standard DBRC interfaces.

DBRC Log Selection uses the DBRC API service DSPAPI00, only requiring READ access intent with the READONLY=YES option.

However, some installations do not allow you to access the online RECON data sets, for reasons such as:

- User batch jobs can cause IMS systems to wait, holding up critical transaction workload.
- Prior to IMS version 10, update intent to the RECONs was required.

In such installations, DBRC Log Selection cannot be used against active RECON data sets. An alternative is to use copies of the RECON data sets.

Creating copies of the active RECON data sets

This JCL creates copies of the active RECON data sets.

```
//IMSPA    JOB ,NOTIFY=&SYSUID
//*
//DELETE   EXEC PGM=IDCAMS
//SYSPRINT DD   SYSOUT=*
//SYSIN    DD   *
 DELETE ('OFFLINE.IMSP.RECON1' -
         'OFFLINE.IMSP.RECON2' -
         'OFFLINE.IMSP.RECON3')
 SET MAXCC=0
/*
//DEFINE   EXEC PGM=IDCAMS
//SYSPRINT DD   SYSOUT=*
//SYSIN    DD   *
 DEFINE CLUSTER (NAME('OFFLINE.IMSP.RECON1') -
                 MODEL('IMSP.RECON1'))
 DEFINE CLUSTER (NAME('OFFLINE.IMSP.RECON2') -
                 MODEL('IMSP.RECON2'))
 DEFINE CLUSTER (NAME('OFFLINE.IMSP.RECON3') -
                 MODEL('IMSP.RECON3'))
/*
//REPRO    EXEC PGM=IDCAMS
//SYSPRINT DD   SYSOUT=*
//I1       DD   DISP=SHR,DSN=IMSP.RECON1          1
//O1       DD   DISP=SHR,DSN=OFFLINE.IMSP.RECON1    2
//I2       DD   DISP=SHR,DSN=IMSP.RECON2
//O2       DD   DISP=SHR,DSN=OFFLINE.IMSP.RECON2
//I3       DD   DISP=SHR,DSN=IMSP.RECON3
//O3       DD   DISP=SHR,DSN=OFFLINE.IMSP.RECON3
//SYSIN    DD   *
 REPRO IFILE(I1) OFILE(O1)
 SET MAXCC=0
 REPRO IFILE(I2) OFILE(O2)
 SET MAXCC=0
 REPRO IFILE(I3) OFILE(O3)
 SET MAXCC=0
/*
```

Figure 112. JCL for creating copies of the active RECON data sets

1 Active RECON data set names: `IMSP.RECON`*n*

2 Copied RECON data set names: `OFFLINE.IMSP.RECON`*n*

Note that one of the REPRO requests may fail. This can occur against the spare RECON data set, but this is not a problem and can be ignored.

You will need to repeat this step periodically so that the copies contain the most recent SLDS data sets.

Changing the system definition

The IMS PA system definitions must be modified to specify the RECON data set copies.

The following system definition for IMS subsystem IMSP demonstrates how to specify the alternate RECON data set names.

```
                              IMS Subsystem                      More: < >
Command ===> ____________________________________________________________

IMS Subsystem definition:
IMS Subsystem ID  . . . . IMSP IMS Version (VRM) . . . 151 +  1
Description . . . . . . . IMS Production
RESLIB Data Set . . . . . 'IMSP.SDFSRESL'                      2
-------------------------------------------------------------------------
Specify required view . . 1  1. DBRC Settings   4. Groups
                             2. Log Files       5. OMEGAMON TRF Files
                             3. Monitor Files   6. OMEGAMON ATF Journals
-------------------------------------------------------------------------
Specify DBRC Settings for automated log file selection:

DBRC Subsystem ID . . . ________  (Specify RSENAME for XRF)
DBRC IMSplex name . . . _____     (RECON Loss Notification)
DBRC Sharing Group ID . ___       (Parallel RECON Access)
RECON Data Set 1  . . . 'OFFLINE.IMSP.RECON1'                  3
               2  . . . 'OFFLINE.IMSP.RECON2'
               3  . . . 'OFFLINE.IMSP.RECON3'
MDA Data Set  . . . . . ____________________________________    4

Enter "/" to select option         JES2 options:
_  Log Data Sets are Cataloged      (DBRC) Node . . ________ SYSAFF . . ____
_  Use OLDS that are not Archived   (SLDS) Node . . ________ SYSAFF . . ____
_  Use Secondary Log Data Sets
```

Figure 113. Specify the alternate RECON data set names

Note:

1 Ensure that the IMS version is correct. Both DBRC Log Selection and batch reporting need this information to execute their correct version-dependent processors.

2 The RESLIB data set must contain the DBRC utility or API module.

3 Specify the data set names of the RECON copies.

4 The MDA data set specification must be blank to ensure that the RECON copies are used.

Requesting DBRC Log Selection using the copies

There is no difference in the way you request DBRC Log Selection when using RECON copies.

The following Report Set runtime panel shows the settings required to request DBRC Log Selection.

```
  File  SysDefs  Options  Help
--------------------------------------------------------------------------------
                          Run Report Set SAMPLOG
Command ===> ____________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                        ----- Report Interval ------
 System or Group . . . IMSP      +            YYYY/MM/DD  HH:MM:SS:TH
                                         From -1          10:00:00:00
File Selection Options:                  To   -1          11:00:00:00
2  1. Use specified log files
   2. Use DBRC to select log files       Execution Mode:
                                         3  1. Submit Report Set
Unresolved Data Set Options:                2. Edit JCL before submit
2  1. Issue error message                   3. Edit JCL with command input
   2. Edit unresolved JCL
                                         IMS Tools Knowledge Base
Enter "/" to select option               _  Write to the ITKB repository
_  Bypass run-time options prompt           ITKB Server  . . . . ________
```

Figure 114. Run Log Report Set requesting DBRC Log Selection

The generated JCL refers to the RECON copies.

```
//IMSPA    JOB ,NOTIFY=&SYSUID
//*
//* IMS PA Report Set SAMPLOG - Sample Log Report Set
//*
//IPIDBRC  EXEC PGM=IPIDBRC
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//SYSUDUMP DD  SYSOUT=*
//SYSPRINT DD  SYSOUT=*
//IPIPRINT DD  SYSOUT=*
//IPIRDR   DD  SYSOUT=(A,INTRDR)
//IPIWRK1  DD  SPACE=(CYL,(1,1,1)),UNIT=SYSDA
//IPIWRK2  DD  SPACE=(CYL,(3,1)),UNIT=SYSDA
//SYSIN    DD  SPACE=(CYL,(1,1)),UNIT=SYSDA
//IPIPARM  DD  *
FROM=(-1,10:00:00:00)
TO=(-1,11:00:00:00)
IMSID=IMSP
  VRM=121
  CAT=NO
  OLDS=NO
  RESLIB=IMSP.SDFSRESL
  RECON1=OFFLINE.IMSP.RECON1
  RECON2=OFFLINE.IMSP.RECON2
  RECON3=OFFLINE.IMSP.RECON3
/*
//IPISKEL  DD  DATA,DLM=$$
  ...
```

Figure 115. JCL for DBRC Log Selection using the RECON copies

IMS Connect Extensions Journal File Selection

IMS Connect Extensions Journal File Selection is an IMS PA facility that automatically selects the Journal files for report processing.

This facility is similar to DBRC Log Selection. It offers an alternative to having to explicitly specify or select the Journal input files. Simply specify the time period for which IMS Connect reporting is required, and IMS PA will select the Journal files covering that time period.

Journal File Selection can be used as:

- An alternative to specifying or selecting Journal input file names prior to report submission
- A facility to generate report JCL for submission by an automated job scheduler

Preparing for Journal File Selection

To prepare for using Journal File Selection, you need to first specify the IMS Connect Extensions Definitions Data Set.

From the IMS PA primary option menu, select option 0.5 **IMS Connect Extensions Definitions Data Set** to display the panel where you can enter the name of the IMS Connect Extensions data set.

```
                IMS Connect Extensions Definitions Data Set

Command ===> ____________________________________________________________

Specify the name of the IMS Connect Extensions Definitions Data Set.

Data Set Name  . . . 'CEX.REPOSTRY'_____________________________
```

Figure 116. IMS Connect Extensions Definitions Data Set

Running reports using Journal File Selection

After you have specified your IMS Connect Extensions Definitions Data Set, you can submit report JCL using Journal File Selection. This enables IMS PA to select the correct Journal files for the time period.

Procedure

To use Journal File Selection:

1. From the IMS PA primary option menu, select option 3 **Report Sets**. Prepare your CEX Report Sets in the usual way.
2. Issue the RUN command to run your Report Set. The Run Connect Report Set panel is displayed.
3. From the Run Report Set panel, specify the required **Report Interval**.
4. Specify the required IMS Connect system in **System Selection**.
5. Select **File Selection Option** 2, **Automated file selection**.
6. Optionally, change **Execution Mode** to instruct IMS PA how to build the report JCL. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling, or ad hoc report requests.
7. Press Enter to complete the request.

   IMS PA constructs the JCL according to your requirements. For the SUBMIT command, IMS PA submits the Report JCL (assuming no missing data sets). For the JCL or JCLCMD commands, IMS PA presents the Report JCL in ISPF edit.

Journal File Selection

Connect Journal File Selection is performed in batch by the Automated File Selection utility, IPIDBRC. Report JCL built by the dialog when Journal File Selection is used differs from Report JCL for explicitly specified Journal files.

Using Automated File Selection causes IMS PA to execute two jobs:

1. The Automated File Selection utility to select the required Journal files and build then submit the Report JCL
2. Report processing, as submitted by the Automated File Selection utility

The Automated File Selection JCL is a single step job whose JCL is constructed from the options specified in the dialog.

The Automated File Selection utility performs the following tasks:

- Selects the required Connect Journal files for processing
- Constructs the Report JCL, appending Journal file DD statements at the end of the Report JCL skeleton
- Submits the constructed Report JCL

The execution of the Report Set (or batch commands) takes place in a second job, submitted by the Automated File Selection utility.

Splitting Journal selection and Report processing into two jobs enables IMS PA to avoid dynamic allocation of Journal files on tape devices. Leaving allocation of tape devices to JES or the initiator avoids potential job failures.

Report Set JCL using Automated File Selection

IMS PA uses options that you specify in the dialog to build JCL that invokes the Automated File Selection utility before running a Report Set.

IMS Connect Extensions Automated File Selection performs the following tasks:

1. Selects the Connect Journal files for processing by invoking IPIDBRC
2. Constructs the Report JCL
3. Submits the Report JCL

IMS PA builds the JCL to execute the Automated File Selection utility IPIDBRC using the following options specified from the dialog.

JOB **Job Statement Information** in IMS PA Settings.

STEPLIB DD
IMS PA Load Library in IMS PA Settings.

SYSPRINT DD
IPIDBRC utility message output file.

CEXDEF DD
IMS Connect Extensions Definitions Data Set specified in your Profile Options. This data set contains the IMS Connect Extensions system definitions.

IPIRDR DD
Internal Reader file. IMS PA submits Report Set JCL to this file after Automated File Selection has completed.

You can also specify a Data Set or SYSOUT class instead of the Internal Reader. If you do so, IPIDBRC will write the Report Set JCL to the nominated destination but will not submit the JCL. This facility allows you to generate and save the required JCL, including required Journal files, for editing without having the job submitted.

IPIPARM DD *
Automated File Selection parameter input.

Execution parameters are passed to the Automated File Selection utility in DDname IPIPARM:

FROM=(*yyyy***/***mm***/***dd***,***hh***:***mm***:***ss***:***th***)**
Reporting start date/time. Date is required, and can be an actual date specification, or a relative date. Relative dates are specified as 0, -1, -2,.... , and signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. Time is optional, and if not specified, defaults at run time to the start of the day.

TO=(*yyyy***/***mm***/***dd***,***hh***:***mm***:***ss***:***th***)**
Reporting end date/time. Date is required, and must be in the same format as the FROM specification. Time is optional, and if not specified, defaults to the end of the day.

HWSID=*cccccccc*
IMS Connect system ID. The name of the IMS Connect system against which you want to run the CEX reports.

IPISKEL DD
CEX Report JCL skeleton. IPISKEL contains the Connect Report Set JCL similar to that shown in "IMS Connect Report Set JCL" on page 601 or "Connect JCL with command input" on page 602.

```
//IMSPA    JOB (ACCOUNT),'NAME'
//*
//* IMS PA Report Set CEXAS01 - IMS PA Report Set
//*
//IPICEX   EXEC PGM=IPIDBRC
//STEPLIB  DD  DISP=SHR,DSN=IMSPA.V440.SIPILINK
//SYSUDUMP DD  SYSOUT=*
//SYSPRINT DD  SYSOUT=*
//IPIPRINT DD  SYSOUT=*
//IPIRDR   DD  SYSOUT=(A,INTRDR)
//IPIWRK1  DD  SPACE=(TRK,(1,1,1)),UNIT=SYSDA
//IPIWRK2  DD  SPACE=(TRK,(3,1)),UNIT=SYSDA
//SYSIN    DD  SPACE=(CYL,(1,1)),UNIT=SYSDA
//CEXDEF   DD  DSN=CEX.REPOSTRY,
//             DISP=SHR
//IPIPARM  DD  *
FROM=(-1,10:00:00.00)
TO=(-1,12:00:00.00)
HWSID=IMS_Connect_System_ID
/*
//IPISKEL  DD  DATA,DLM=$$
//IMSPA  JOB (ACCOUNT),'NAME'
//*
//* IMS PA Report Set CEXAS01 - IMS PA Report Set
//*
//IPI      EXEC PGM=IPIMAIN
//STEPLIB  DD  DISP=SHR,DSN=IMSPA.V440.SIPILINK,
//*  Sysout data set
//SYSPRINT DD  SYSOUT=*
//IPIDIAGS DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  IMS Connect List Extract File
//IPICTRLS DD  DISP=SHR,DSN=IPI.CEXLIST.EXTRCT
//*  IMS Connect Summary Extract File
//IPICTRSU DD  DISP=SHR,DSN=IPI.CEXSUMM.EXTRCT
//*  Report Set
//IPIRSET  DD  DISP=SHR,DSN=IMSPA.V440.RSET(CEXAS01)
$$
```

Figure 117. JCL for Connect Extensions Automated File Selection

Part 4. Form-based transit reporting

Report Forms allow you to personalize the format and content of Transaction Transit reports and extracts to include only the information that interests you. This part describes how to request and run Form-based reports and extracts using the dialog and batch commands.

Chapter 16. Introduction to Form-based transit reporting

Report Forms are used to tailor the format and content of Transaction Transit reports and extracts so that reporting can be targeted to meet your individual requirements.

A Report Form is a user-defined template for the design of a report that specifies:

- A list of fields to be reported (for example, transaction code, user ID, response time, CPU time).
- Summary options for grouping purposes (for example, summarize by transaction code or by transaction code within each 5 minute time interval).
- Statistical functions including average, minimum, maximum, standard deviation, peak percentile, total, and count (for example, report average response time, 95th percentile response time or total number of database calls).

With Form-based reports and extracts you can:

- Print report output or view using SDSF or ISPF Outlist utility.
- Export extract data sets to DB2 tables or PC spreadsheets.

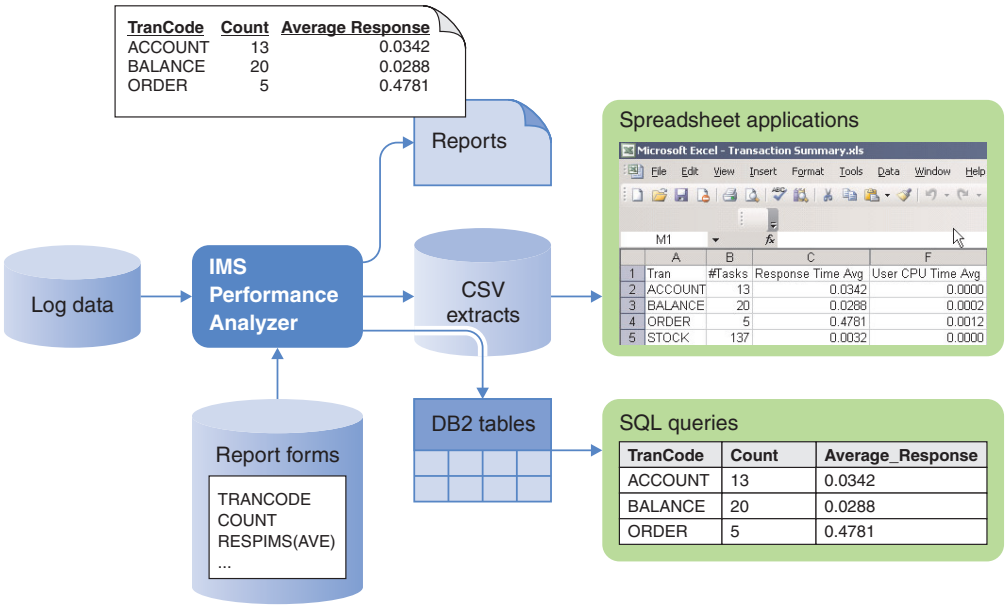


Figure 118. IMS PA Form-based transit reporting overview

Form-based reporting can be requested from the dialog, or by using batch commands specifying the FIELDS keyword in the LIST and SUMMARY report commands.

Form-based reporting features and benefits

Compared to standard transit reporting, Form-based reporting is distinguished by its usability and coverage.

Usability

The usability features of Form-based reporting include:

- Customizable reporting. You can design your own reports, select what you want to see and how you want to see it:
  - Batch command syntax is complicated, so you can use the Form editor in the dialog to design your report formats, or select from supplied samples.
  - Reference the Form in a Report Set.
  - Submit the Report Set to generate the JCL.
  - Save the JCL in your library, then review or modify for subsequent report requests.
- Two reporting styles:
  - List – Chronological list of transactions with performance details.
  - Summary – Statistical analysis based on any key field combination.
- For summarization, you can fold transaction activity by any means:
  - For a dashboard effect, summarize by:
    - Region type – MPP, BMP, JAVA, IFP, ...
    - Input source – OTMA (Connect and MQ), APPC, VTAM, ...
    - Time interval – show performance for each hour of the day.
  - For a more in-depth analysis, summarize by transaction code.
  - Specify up to 8 keys to group information as you need to see it.
- Report output options:
  - Print the report or view it in SDSF.
  - Extract to a CSV file for analysis using a PC tool such as Microsoft Excel.
  - Export to DB2 tables for SQL-based analysis.
- More information, more reliable. Form-based transit reporting exploits additional log record types to provide:
  - More transit time details, for example the type 5612 record that signals end of transaction processing provides more reliable processing elapsed time values.
  - Additional resource usage information, for example type 5937 provides Fast Path database usage statistics.
- Almost all performance information contained in the log is now selectable in the report. There are over 100 pieces of information in total. Select what you want to see:
  - The dialog form editor has online help for every report field, so you do not need to reference the manual.
- Up to microsecond precision for transit and CPU times – formerly millisecond.
- Statistical functions – average, maximum, minimum, stand deviation, peak percentile, total.
- Distributions or service levels – “What percentage of transactions had a response time greater than 1 second?”
- Improved reporting accuracy, both in terms of coverage and response time breakdown – more log record types analyzed:
  - Processing time is now very accurate, where before it was an estimate.
  - All transaction activity accounted for.
  - Use Start Level=2 to report all transactions, even when the 01 input record is in a previous log file – input queue time is extrapolated.
- Run as many reports as you want in a single pass of the data – each with a different focus.

- Create a Transaction Index – extract file that contains a record for each IMS transaction, together with cumulative information from the IMS log about that transaction:
  - Use the index in IMS PA to run additional reports, bypassing the SLDS log files and saving time.
  - Use the index in IMS PI for intelligent diagnosis, for example *"Locate all transactions with response time greater than 1 second"*.
- Wide reports – no 132 character page width restriction.

Coverage

Form-based reporting provides better coverage. All transactions in the IMS log are reported. The standard style reports may have omitted some transactions due to not analyzing all log record types that affect transit activity. Incomplete transactions (not reported in the standard style reports) can also be reported in Form-based reporting by specifying a reporting completion level, so that no transactions slip through the reporting net.

- Integrated MPP and IFP support – all transaction types now supported:
  - See your entire transaction workload in a single report.
- Fast Path database support – for MPP and IFP transactions alike:
  - DEDB calls, Area I/O, FP buffer usage and contention, VSO.
- End-to-end MSC
  - Merge the front and back end logs to get the complete response time breakdown.
- IMS V12+ support – including support for 56FA transaction-level accounting – accurate CPU time, VSAM and OSAM DB IO and lock analysis.
- IMS Connect reporting, including end-to-end IMS and Connect analysis:
  - Create a form that contains both Connect and IMS events.
  - Merge the IMS log with the IMS Connect Extension journal.
  - View the resulting report that shows Connect and IMS event latencies together.
- Comprehensive OMEGAMON TRF reporting.

List reporting

The List Report Form defines the columns to be included in a Transit List report or extract. Each line in the list represents one transaction, typically used for the detailed analysis of recent transaction events.

The following is an example of a List Report Form, so every transaction in the IMS log file will be reported. All available transit information will be reported by this Form.

```
EDIT                    List Report Form - ALLLIST                    EOR reset
Command ===> _____________________________________________ Scroll ===> PAGE

Description . . . Transaction List Report/Extract  Page Width . . . 371
                                                    Precision  . . . 3
                                                    Digit Grouping   NO

   Field
/  Name +   Func  Len  Description
__ STARTIMS TIME   12  IMS transaction arrival time
__ ORGLTERM _____   8  Originating LTERM
__ TRANCODE _____   8  Transaction Code
__ PROGRAM  _____   8  Program or PSB name
__ PSTID    _____   4  Region PST ID
__ QTYPE    _____   6  Queue type
__ REGTYPE  _____   3  Region type
__ CLASS    _____   3  Transaction Class
__ PRIORITY _____   2  Transaction priority
__ USERID   _____   8  User ID
__ LTERMOUT _____   8  Output LTERM
H  CPUTIME  _____   8  CPU time
__ INPUTQ   _____   8  Input queue time
__ PROCESS  _____   8  Processing time
__ OUTPUTQ  _____   8  Output queue time
__ OUTPUTG  _____   8  SMQ global output queue time
__ OUTPUTL  _____   8  SMQ local output queue time
__ TOTALTM  _____   8  Total transaction elapsed time
__ UORTIME  _____   8  Unit-of-recovery time
H  RESPIMS  _____   8  IMS response time
__ DBCALLS  _____   8  DB call count
__ DBGETS   _____   8  DB get call count
__ DBUPDATS _____   8  DB update call count
__ DBWAITS  _____   8  DB wait count
__ DCCALLS  _____   8  DC call count
__ FPCALLS  _____   8  Fast Path DB call count
__ FPGETS   _____   8  Fast Path DB get call count
__ FPUPDATS _____   8  Fast Path DB update call count
__ FPWAITS  _____   8  Fast Path DB wait count
__ MSGLIN   _____   8  Input Message length
__ MSGLOUT  _____   8  Output Message length
__ ORGUOWID _____  16  Originating tracking unit-of-work (UOW) ID
__ RECTOKEN _____  16  Recovery token
__ COMPLVL  _____   5  IMS Completion Level
__ DBIOCALL _____   8  Total OSAM and VSAM database IO count
__ DBIOTIME _____   8  Database IO elapsed time
__ LOCKTIME _____   8  Database Locking elapsed time
__ VSAMREAD _____   8  VSAM read IO count
__ VSAMWRIT _____   8  VSAM write IO count
__ OSAMREAD _____   8  OSAM read IO count
__ OSAMWRIT _____   8  OSAM write IO count
__ EOR      _____      ----------------- End of Report ------------------
__ ESAFCALL _____   8  Total ESAF call count
__ EOX      _____      ----------------- End of Extract -----------------
******************************** Bottom of data ********************************
```

Figure 119. List Report Form: all transit information

You can delete fields you do not want reported, insert fields that you do want reported, or move fields in the Form to suit your preferred order. You can use line action **H** against fields in the Form to display additional help information about the fields.

This Report Form produces a report like the following that lists all transactions and their performance metrics.

```
                                        IMS Performance Analyzer
                                      List all performance indicators

LIST0001 Printed at 11:37:35 13Sep2014     Data from 10.40.00 26Jun2014

Org                       Proc         Queue  Reg        IMS Tran       CPU          Output    InputQ  Process
LTERM    Trancode Program  IMS ID   PST Type   Typ Cls Pr Start         Time Userid   LTERM       Time     Time . . .
WH000110 TPCCS    PSBSL    IM2A      18 LOCAL  MPP   5  1 10.40.00.203    21 WH000110 WH000110       4       60
WH000302 TPCCS    PSBSL    IM2A      19 LOCAL  MPP   5  1 10.40.00.747    22 WH000302 WH000302       2       79
WH001106 TPCCS    PSBSL    IM2A      19 LOCAL  MPP   5  1 10.40.01.671    24 WH001106 WH001106       2       65
WH000309 TPCCS    PSBSL    IM1A       9 LOCAL  MPP   5  1 10.40.00.191    18 WH000309 WH000309       3       68
WH001303 TPCCS    PSBSL    IM1A       9 LOCAL  MPP   5  1 10.40.00.355    12 WH001303 WH001303       1       51
WH001007 TPCCS    PSBSL    IM1A       9 LOCAL  MPP   5  1 10.40.01.201    26 WH001007 WH001007       1       47
```

Figure 120. Form-based Transaction List report

Summary reporting

The Summary Report Form defines the columns to be included in a Transit Summary report or extract. Each line in the summary represents transaction activity summarized by the specified grouping or key fields, for example statistics for each transaction over the entire reporting period or time interval.

The following is an example of a Summary Report Form, so transaction activity is summarized according to the key fields. All available transit information is reported by this Form.

```
VIEW                  Summary Report Form - ALLSUMM     Row 1 of 33 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

Description . . . Transaction Summary Report        Page Width . . . 269
                                                    Precision  . . . 3
                                                    Digit Grouping   NO

   Field    Sort
/  Name +   K  O Func  Len Description
__ STARTIMS K  * TIME     IMS transaction arrival time
__ TRANCODE K  A _____    8 Transaction Code
__ TRANCNT     _ _____    8 Transaction count
__ CPUTIME     _ AVE      8 CPU time
__ INPUTQ      _ AVE      8 Input queue time
__ PROCESS     _ AVE      8 Processing time
__ OUTPUTQ     _ AVE      8 Output queue time
__ OUTPUTG     _ AVE      8 SMQ global output queue time
__ OUTPUTL     _ AVE      8 SMQ local output queue time
__ TOTALTM     _ AVE      8 Total transaction elapsed time
__ UORTIME     _ AVE      8 Unit-of-recovery time
__ RESPIMS     _ AVE      8 IMS response time
__ DBCALLS     _ AVE      8 DB call count
__ DBGETS      _ AVE      8 DB get call count
__ DBUPDATS    _ AVE      8 DB update call count
__ DBWAITS     _ AVE      8 DB wait count
__ DCCALLS     _ AVE      8 DC call count
__ FPCALLS     _ AVE      8 Fast Path DB call count
__ FPGETS      _ AVE      8 Fast Path DB get call count
__ FPUPDATS    _ AVE      8 Fast Path DB update call count
__ FPWAITS     _ AVE      8 Fast Path DB wait count
__ MSGLIN      _ AVE      8 Input Message length
__ MSGLOUT     _ AVE      8 Output Message length
__ DBIOCALL    _ AVE      8 Total OSAM and VSAM database IO count
__ DBIOTIME    _ AVE      8 Database IO elapsed time
__ LOCKTIME    _ AVE      8 Database Locking elapsed time
__ VSAMREAD    _ AVE      8 VSAM read IO count
__ VSAMWRIT    _ AVE      8 VSAM write IO count
__ OSAMREAD    _ AVE      8 OSAM read IO count
__ OSAMWRIT    _ AVE      8 OSAM write IO count
__ ESAFCALL    _ AVE      8 Total ESAF call count
__ EOR         _ _____      ----------------- End of Report ------------------
__ EOX         _ _____      ----------------- End of Extract -----------------
******************************** Bottom of data ********************************
```

Figure 121. Summary Report Form: all transit information

Notice the fields marked with K at the top of the Form. Key fields determine how transaction activity is summarized. In this case, STARTIMS and TRANCODE indicate summarization by transaction code with a specified time interval.

The Transaction Summary report provides a statistical summary of transaction activity and related performance metrics. Each line in the summary represents transaction activity summarized by the specified grouping or key fields, for example statistics for each transaction over the entire reporting period or time interval.

```
                                    IMS Performance Analyzer
                                   Summarize all performance data

SUMM0500 Printed at 15:49:10 13Jul2008     Data from 14.27.59 12Jun2007 to 15.32.38 12Jun2007                    Page     1

                    Avg      Avg      Avg      Avg      Avg      Avg      Avg      Avg      Avg      Avg      Avg      Avg
             Tran   CPU    InputQ  Process  OutputQ SMQ Glob SMQ Locl    Total      UOR IMS Resp  DB Call  DB Get DB Updat
Trancode    Count   Time     Time     Time     Time OutQTime OutQTime IMS Time     Time     Time    Count    Count    Count
CEXSNONC        8      8       25      950        0       20        0      960     4358       81        3        1        2
CEXTNONC       12     13       13      548        0       18        0      556    61837     1104        4        1        2
DFSIVP4         2      -        -        -        -        -        -        -        -        -        -        -        -
IVTCV          32      2       13      305       11       92        0      330      308      142        1        1        0
IVTNO           9      1       30      302        0       28        0      332     7157      112        1        1        0
IVTNV          12      1       10      309       14      182        0      333     5876      211        1        1        0
PART            3     14       93      613        0       38        0      705      616      489        1        1        0
Total          78      5       19      424        8       84        0      447    11489      275        2        1        1
```

Figure 122. Form-based Transaction Summary report

Note that summarization is by transaction code, but this can be changed to any key field defined in the Form. The Transaction Count represents the number of transactions in the statistical range for the row.

The level of summarization can be varied depending on the number of key fields. You can specify up to 8 key fields to summarize and sort by, and you can request up to 7 levels of subtotaling.

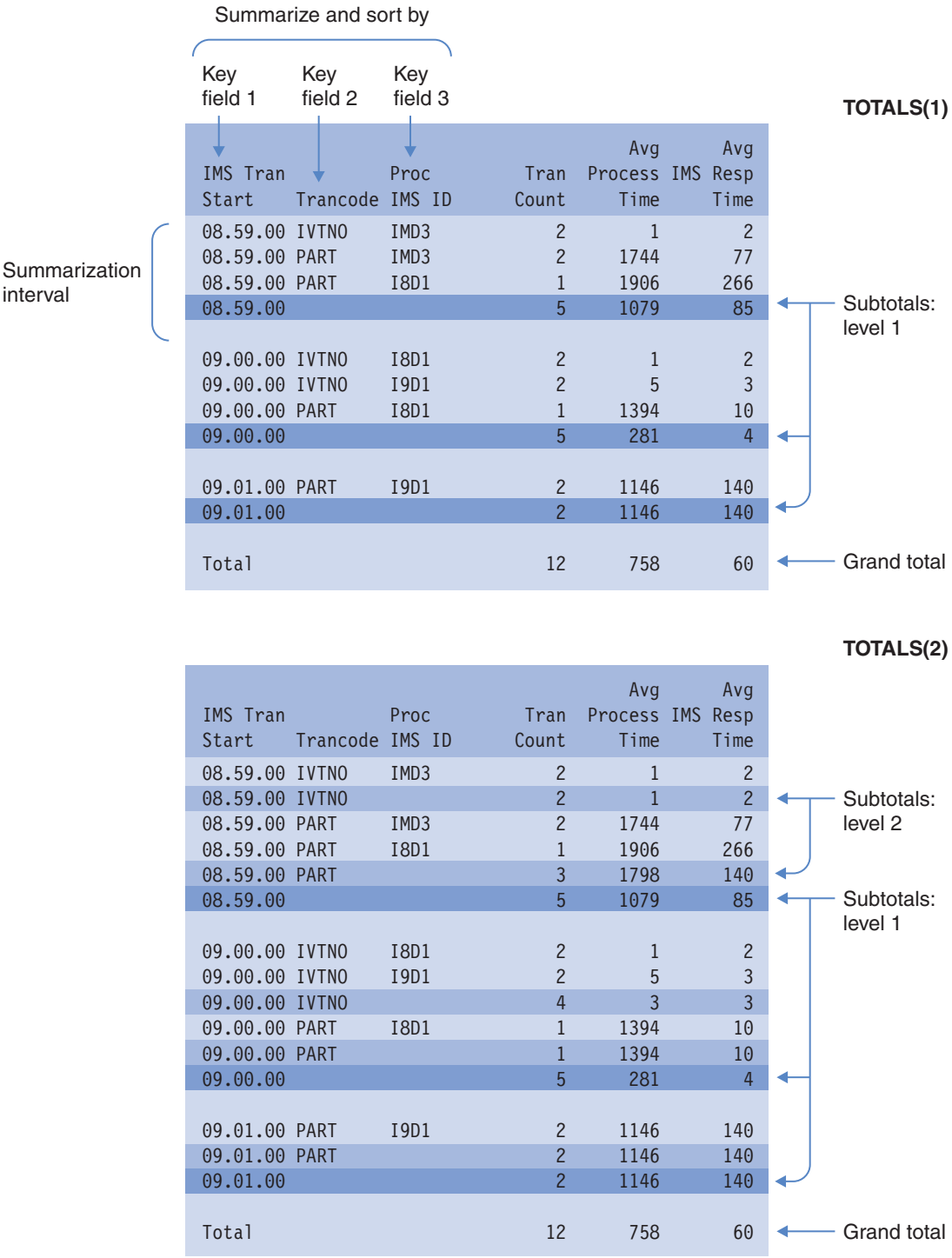


Figure 123. Form-based Summary report showing different levels of totaling

Transaction information provided by Report Forms

Form-based reporting is available for IMS, IMS Connect, Combined IMS/IMS Connect, and OMEGAMON TRF reporting.

IMS

Message queue related transaction activity is reported using the LOG Report Set. Input is from the IMS log.

Over 150 IMS transaction information fields are selectable in a Report Form, including:

- Identification:
  - Transaction code, User ID, LTERM, Terminal.
  - Originating and processing tracking unit of work IDs.
  - Recovery token.
- Run-time attributes:
  - Transaction type including MSC, APPC, OTMA, IMS Connect.
  - Response mode, conversational, recoverable.
  - Locally or globally processed on the shared queue.
  - Transaction class and priority.
- Completion, including ABEND code.
- Message, including input and output message lengths and counts.
- Performance:
  - Response time.
  - Transit time broken down into input queue, processing and output queue times.
  - WFI.
  - Scheduling and syncpoint latencies.
- Resource usage:
  - CPU time.
  - CPU service units.
  - Full Function database call and wait activity.
  - Fast Path database call and wait activity.
- Fast Path (IFP) transactions.

IMS Connect

IMS Connect transaction activity is reported using the CEX Report Set. Input is from the IMS Connect Extensions journal data set.

Over 40 IMS Connect transaction information fields are selectable in a Report Form, including:

- Identification:
  - Transaction code, User ID, LTERM.
  - Client ID, Port number, Socket number, Tpipe name.
  - Logon (event) token.
- Run-time attributes:
  - Commit mode and SYNCH level.
- Completion:
  - ACK and NAK, timeout and other failure indicators.
- Performance:
  - Response time

– Transit time broken down into TCP/IP, message exit, SAF and OTMA components.

Combined IMS and IMS Connect

Combined IMS Connect and IMS log reporting can be requested from a CEX Report Set. Input from the IMS log and IMS Connect Extensions journal is merged to provide an end-to-end picture of IMS Connect transactions.

Combined reporting allows you to select performance information from both the IMS log and IMS Connect environments. A single report provides end-to-end IMS Connect analysis. You can see at a glance where transaction performance is adversely affected, for example IMS Connect TCP/IP socket activity, IMS input queue, or IMS transaction execution in a message processing region.

OMEGAMON TRF

The TRF Report Set provides List and Summary Form-based reports from IMS transaction performance and resource utilization statistics collected by the OMEGAMON Transaction Reporting Facility (TRF). The TRF data includes transaction response time breakdown, CPU time, and other resource usage statistics, Full Function and Fast Path database DL/I call count and elapsed time, and DB2 database call count and elapsed time.

Combined reporting allows you to select performance information from both the IMS log and IMS Connect environments. A single report provides end-to-end IMS Connect analysis. You can see at a glance where transaction performance is adversely affected, for example IMS Connect TCP/IP socket activity, IMS input queue, or IMS transaction execution in a message processing region.

Related reference:

Chapter 41, “Glossary of Report Form field names,” on page 777
This glossary lists all the fields available to Form-based transit and OMEGAMON TRF message queue reporting.

Requesting Form-based reporting

The Report Forms editor is used to create Report Forms. Report Forms are saved into the Report Forms data set (similar to Report Sets) and can be shared with other users.

Procedure

1. Select option 10 **Report Forms** from the IMS PA primary option menu and define a Report Form.

   Several sample Report Forms are provided for some of the more common performance analysis tasks.
2. Select option 3 **Report Sets** from the IMS PA primary option menu and request one or more reports.

   A category of reports called **Transaction Transit Reports (Form-based)** is available in the LOG and CEX Report Set types:

   - The LOG Report Set requests IMS transaction transit reporting from the IMS log.
   - The CEX Report Set requests Connect transaction transit reporting from the IMS Connect Extensions journal.

- Optionally the CEX Report Set can request combined Connect and IMS reports by merging IMS Connect Extensions journal and IMS log file data to provide an end-to-end picture of the Connect transaction lifecycle.

Combined IMS log and IMS Connect Extensions journal reporting requires the specification of a System Definition Group (option 2 **Groups** from the IMS PA primary option menu) that includes both IMS and IMS Connect systems.

Chapter 17. Designing Report Forms

You can use Report Forms to tailor the format and content of the Transaction Transit reports in IMS log and IMS Connect Report Sets, and Message Queue reports in OMEGAMON TRF Report Sets.

There are two types of Report Form, matching the two Transaction Transit reports:
- To tailor a Transaction Transit List report, you use a List Report Form.
- To tailor a Transaction Transit Summary report, you use a Summary Report Form.

Both reports are "tabular": they display lines of data under column headings.

Both types of Report Form define:
- The report title.
- The fields displayed in the report columns.
- The order of the columns.

However, while each line in a list report contains data for a single transaction, each line in a summary report can summarize data for many transactions. To do this, Summary Report Forms specify a key consisting of up to 8 fields. Transactions with the same key appear on a single line with average values for the non-key fields. If an average value is not appropriate for a field, you can select another statistical function, such as max, min, or total.

Summary reports can contain three types of line:

Summary
These lines summarize transactions with the same key.

Summary lines will always be included in the report.

Subtotal
These lines summarize transactions at the level of each key field, up to a "totals level" that you specify when you request the report (not in the Report Form).

For example, if you specify a totals level of 3, then your summary report will contain 3 types of subtotal line:
- For each unique combined value of key fields 1, 2, and 3.
- For each unique combined value of key fields 1 and 2.
- For each unique value of key field 1.

Subtotal lines appear in the report between summary lines, as the values of the key fields change. Specifying a totals level that is greater than the number of key fields has the same effect as specifying the number of key fields: the report will contain subtotals for each key field.

Subtotal lines will only be included when a "totals level" in the range 1–7 is specified when you request the report.

Grand total
This single line appears at the bottom of the report, and groups transactions for the entire report interval.

A grand total line will only be included in the report when it is:

- Requested explicitly by specifying a "totals level" of 0 (the default).
- Requested implicitly by specifying a "totals level" in the range 1–7.

No totals are included if you do not specify a "totals level" (leave it blank) or if you specify the batch report operand NOTOTALS.

When requesting a summary report, in addition to specifying a Report Form, you can specify a summary time interval. This causes the report to summarize data at regular intervals within the overall report interval, for example, if you request a summary report for 12 noon to 1 p.m., and you specify a summary time interval of 15 minutes.

Note: The summary time interval is only relevant when the fields STARTIMS or STARTCON are specified in the Report Form key.

The following figure shows the structure of a summary report where 3 key fields have been selected in the Report Form and a "totals level" of 2 was specified when the report was requested.

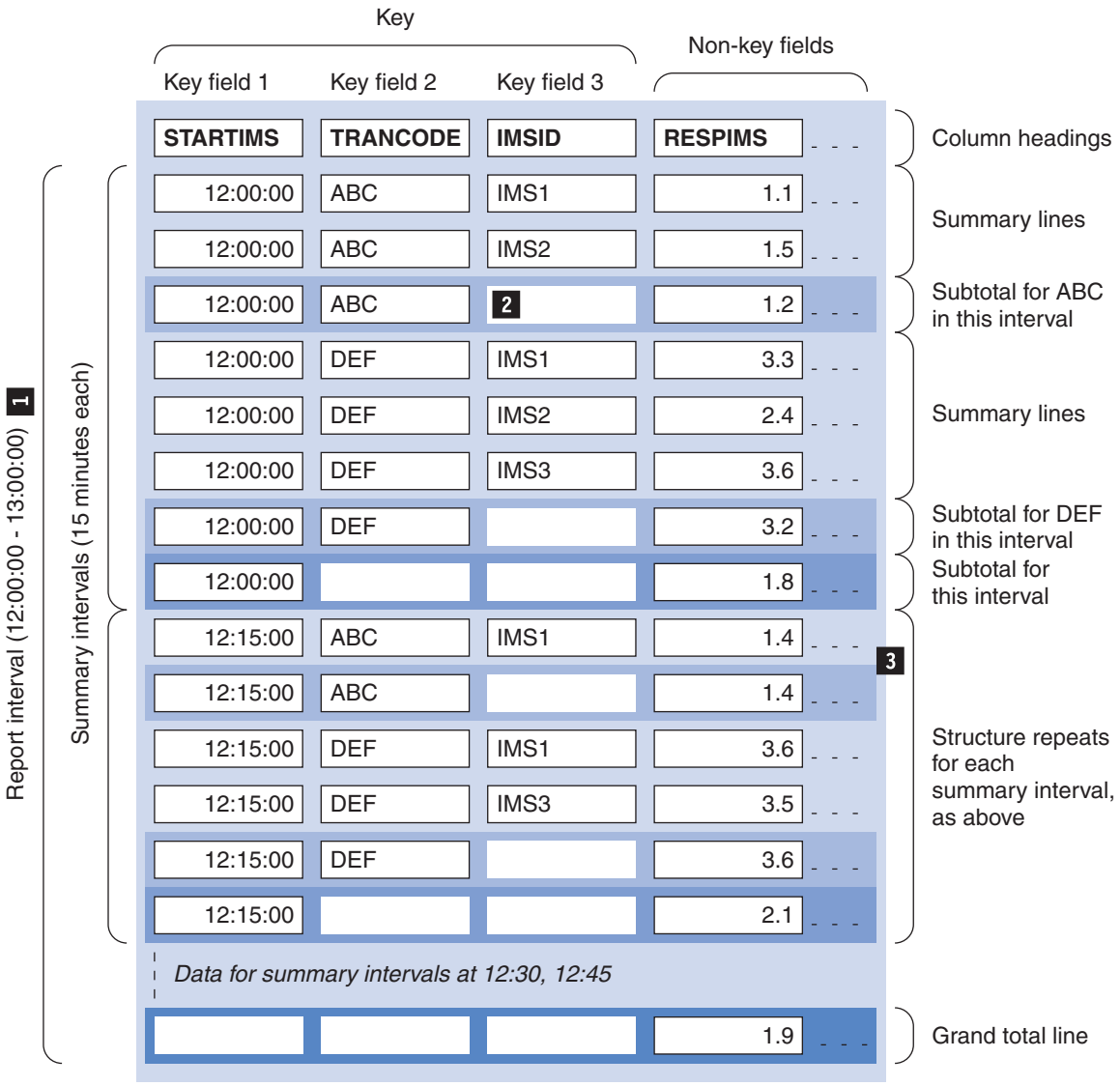


Figure 124. Structure of a summary report

1 You specify these items when you request the report, not in the Report Form: the report interval, the summary interval, and the totals level.

2 Subtotal lines contain one or more blank key fields, indicating the subtotal level.

Note: the 1.2 "subtotal" value shown here is not simply an average of the values 1.1 and 1.5 shown in the previous summary lines. Instead, this "subtotal" is calculated by averaging the IMS response time of every ABC transaction that ran across all IMSIDs included in the report within the summary interval.

3 In this summary interval, the ABC transaction ran only on IMS1. However, the report still contains a subtotal line at the IMSID key field level (even though the subtotal is identical to the summary line).

Maintaining Report Forms

To maintain (create, edit, delete) Report Forms, select option 10 **Report Forms** from the IMS PA primary option menu.

Procedure

Select option 10 **Report Forms** from the IMS PA primary option menu.
The Report Forms panel is displayed, which lists the Report Forms in the nominated Report Forms data set.
The current Report Forms data set is one of the Control Data Sets in your profile

```
  File  View  Samples  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                               Report Forms                  Row 1 to 2 of 2
Command ===> ________________________________________________ Scroll ===> PAGE

Report Forms Data Set  . . : USER.IMSPA.FORM

/   Name    Type             Description              Changed        ID
_  LIST1    LIST    List Report Form                2014/01/01 15:11 USER
_  SUMM1    SUMMARY Summary Report Form             2014/01/12 00:00 USER
 ******************************* Bottom of data ********************************
```

Figure 125. Report Forms

settings. To change it, use **Options** in the action bar.
From the list of Report Forms, you can select one at a time to view or modify, or you can create new Report Forms.
You can also add a selection of sample Report Forms by selecting **Samples** in the action bar or entering the SAMPLES command. See "Sample Report Forms" on page 234.
The Report Forms are listed with the following user-defined attributes:

Name 1–8 character name in ISPF member name format, used to uniquely identify the Report Form within the Report Forms data set. By default, the panel is sorted on the Name field.

Type The type of Report Form, either LIST or SUMMARY.

Description
Free format text up to 32 characters that describes the contents and purpose of the Report Form. The description is used in the report subheading.

In addition, the Report Forms are listed with the following system-generated attributes:

Changed
Date and time when last updated.

ID The userid that last updated the Report Form.

Line actions:
The following line actions can be entered against any row in the Report Forms list:

/ Display the menu of line actions.

E Edit the Report Form.

S Select the Report Form (same as Edit).

V View the Report Form. This looks like the Edit panel but has no 'hold' on the data and has no Save capability.

R Rename the Report Form.

D Delete the Report Form.

X Export data to a DB2 table from a Form-based extract data set created from this Report Form.

Note: The format of the extract data set and the corresponding DB2 table are both defined by this Report Form. Ensure that the Form does not change between extract and export processing.

F Format the form as JCL command input. This option provides a preview to the command input generated by IMS PA when you submit a form-based report or extract that uses this form.

Primary commands:

The following primary commands are valid for this panel:

NEW *name type*

This command creates a new Report Form with the specified *name*. The *type* can be one of:

LIST List Report Form

SUMMARY
Summary Report Form

MODEL
Model on an existing Report Form

It displays the New Report Form window populated with values from your entered command or from the last Report Form you created, and prompts you for further details to define the new Report Form.

Also available from **File** in the action bar.

See "Creating new Report Forms" on page 245 for information on how to proceed.

SELECT *name*

This command (or S) selects the specified Report Form for editing.

Also available from **File** in the action bar.

SORT Name | Type | Description | Changed | Id

This command sorts the list of Report Forms on one or two columns. The default sort field is **Name**. The sort disregards upper and lower case, and is ascending for all but the **Changed** column which is descending. The sort order is retained only until Exit or another SORT command is issued.

LOCATE *string*

This command (or L or LOC) is used to locate an entry in the list based on the primary sort field. By default, LOCATE operates on the **Name** field. The string should be no longer than the primary sort field and not enclosed in quotes. The display will scroll to the entry which matches the string, or the entry preceding it if an exact match is not found.

SAMPLES

This command displays the list of Sample Report Forms. You can select one or more Forms from the list to populate your Report Forms data set.

Also available from **Samples** in the action bar.

Sample Report Forms

A set of sample Report Forms is provided with IMS PA. They demonstrate how IMS PA reports can be tailored to reflect the many ways you use and configure your IMS systems.

The IMS PA reports and extracts produced using these sample Report Forms will provide a detailed picture of the many aspects affecting IMS system performance.

To add the samples to your Report Forms data set, select **Samples** in the action bar of the Report Forms panel or enter SAMPLES on the command line.

```
                                                              Row 1 to 34 of 34
Command ===> S *                              Scroll ===> PAGE

Select one or more sample Report Forms then press Exit.

   Name      Type     Description
.  ALLLIST   LIST     Transaction List Report/Extract
.  ALLSUMM   SUMMARY  Transaction Summary Report
.  ALLSUMMX  SUMMARY  Transaction Summary Extract
.  BADRESP   SUMMARY  Bad Transaction Response Time
.  COMBLIST  LIST     Combined IMS and Connect List
.  COMBSUMM  SUMMARY  Combined IMS and Connect Summary
.  COMPLVL   SUMMARY  Transaction Completion Summary
.  CONNACK   SUMMARY  Connect ACK/NAK Summary
.  CONNLIST  LIST     Connect Transit Log
.  CONNPLEX  SUMMARY  Connect PLEX Usage Summary
.  CONNTCOD  SUMMARY  Connect Analysis by Trancode
.  CPUHIGH   SUMMARY  High CPU Usage Transactions
.  DASH      SUMMARY  Transaction Dashboard
.  DBCTLIST  LIST     List of DBCTL Transactions
.  DBCTSUMM  SUMMARY  Summary of DBCTL Transactions
.  FPANAL    SUMMARY  FP Transit Analysis by Trancode
.  FPBUFUSE  SUMMARY  FP Buffer Usage
.  FPDBCALL  SUMMARY  FP Database Calls
.  FPLOG     LIST     FP Transaction Transit Log
.  FPMSG     SUMMARY  FP Message Statistics
.  FPRESUSE  SUMMARY  FP Resource Usage
.  FPTRANX   LIST     FP Transact Exception - Basic
.  FPTRANXD  LIST     FP Transact Exception - Detailed
.  MSGLEN    SUMMARY  Message Length Analysis
.  QTYPE     SUMMARY  Queue-type Summary
.  RESPDIST  SUMMARY  Response Time Distribution %
.  SMQLIST   LIST     SMQ Transaction Transit Log
.  SMQTCOD   SUMMARY  SMQ Transaction Analysis
.  SYNCCOUT  LIST     Synchronous Callout List
.  TRANCLAS  SUMMARY  Transit Analysis by Class
.  TRANINTV  SUMMARY  Interval Transaction Analysis
.  TRANLIST  LIST     Transaction Transit Log
.  TRANPRTY  SUMMARY  Transit Analysis by Priority
.  TRANRESU  SUMMARY  Transaction Resource Usage
.  TRANTCOD  SUMMARY  Transit Analysis by Trancode
.  SWITLIST  LIST     Program-Switch List
.  SWITSUMM  SUMMARY  Program-Switch Summary
.  TRANRES1  SUMMARY  Transaction Resource Usage
.  TRANRESD  SUMMARY  Tran Resource Usage DLICall Summ
.  OLRLIST   LIST     HALDB Online Reorg List
.  OLRSUMM   SUMMARY  HALDB Online Reorg Summary
 ********************** Bottom of data ***********************
```

Figure 126. Select Sample Report Forms

The sample Report Forms can be added to your Report Forms data set at any time regardless of its current contents. A sample Report Form will not be available for selection if a Report Form of the same name already exists.

Enter line action **S** (or any non-blank character) to select one or more sample Report Forms.

Alternatively, enter `S *` on the command line to select all the samples. The RESET command will clear all line actions.

You can use FIND and **Rfind** (**F5**) to search for a specified character string in any column.

Press **Exit** (**F3**) to complete your selection.

Related reference:

Chapter 41, “Glossary of Report Form field names,” on page 777
This glossary lists all the fields available to Form-based transit and OMEGAMON TRF message queue reporting.

Sample forms for Log reporting

A Report Form is a user-defined template for the design of a report. The batch equivalent is the FIELDS operand. A set of sample report forms is supplied with IMS Performance Analyzer.

The following sample forms are available to demonstrate how Form-based Log Transaction Transit reports can be tailored to meet your specific requirements.

For more information on the fields generated in the sample reports, you can use dialog option 10 **Report Forms** to display the list of sample forms, select the form you are interested in, then enter line action **H** for help information on any field.

List reports

ALLLIST
: Transaction List report/extract

DBCTLIST
: List of DBCTL Transactions

FPLOG
: Fast Path Transaction Transit Log

FPTRANX
: Fast Path Transaction Exception - Basic

FPTRANXD
: Fast Path Transaction Exception - Detailed

SMQLIST
: SMQ Transaction Transit Log

SYNCCOUT
: Synchronous Callout List report

TRANLIST
: Transaction Transit Log

Summary reports

ALLSUMM
: Transaction Summary report

ALLSUMMX
: Transaction Summary extract

BADRESP
: Bad Transaction Response Time

COMPLVL
: Transaction Completion Summary

CPUHIGH
: High CPU Usage Transactions

DASH
: Transaction Dashboard

DBCTSUMM
: Summary of DBCTL Transactions

FPANAL
: Fast Path Transit Analysis by Trancode

FPBUFUSE
: Fast Path Buffer Usage

FPDBCALL
Fast Path Database Calls
FPMSG
Fast Path Message Statistics
FPRESUSE
Fast Path Resource Usage
MSGLEN
Message Length Analysis
QTYPE
Queue-type Summary
RESPDIST
Response Time Distribution %
SMQTCOD
SMQ Transaction Analysis
TRANCLAS
Transit Analysis by Class
TRANINTV
Interval Transaction Analysis
TRANPRTY
Transit Analysis by Priority
TRANRESU
Transaction Resource Usage
TRANTCOD
Transit Analysis by Trancode

Sample forms for Connect and Combined reporting

A Report Form is a user-defined template for the design of a report. The batch equivalent is the FIELDS operand. A set of sample Report Forms is provided with IMS Performance Analyzer. These include samples that demonstrate how Form-based Connect and combined Transaction Transit reports can be tailored to meet your specific requirements.

For more information on the fields generated in the sample reports, select dialog option 10 **Report Forms** to display the list of sample forms, select the form you are interested in, then enter line action **H** for help information on any field. The sample reports available in this category are:

List reports
COMBLIST
Combined IMS and Connect List
CONNLIST
Connect Transit Log

Summary reports
COMBSUMM
Combined IMS and Connect Summary
CONNACK
Connect ACK/NAK Summary
CONNPLEX
Connect PLEX Usage Summary
CONNTCOD
Connect Analysis by Trancode

ALLLIST: Transaction List report

The Transaction List report provides a list of transactions together with the transactions start time, originating LTERM, transaction code, program or PSB name, region PST ID, and more. You can use sample report form **ALLLIST** to format this report.

ALLSUMM: Transaction Summary report

The Transaction Summary report provides a summary of transaction activity grouped by time and transaction code. For each transaction, the report includes a transaction count and averages for CPU time, input queue time, processing time, output queue time, and more. You can use sample report form **ALLSUMM** to format this report.

ALLSUMMX: Transaction Summary extract

The Transaction Summary extract provides a transaction summary grouped by date, time and transaction code suitable for an extract. It provides transaction counts, CPU time averages, and more. You can use sample report form **ALLSUMMX** to format this report.

BADRESP: Bad Transaction Response Time report

The Bad Transaction Response Time report provides an analysis of transaction response time by reporting the longest response times first. You can use sample report form **BADRESP** to format this report.

Instead of reporting in the usual transaction code sequence, the report is sorted in descending response time sequence so those transactions with the worst response time can be easily identified. The breakdown of transit time is provided to identify the reasons for the long response time.

COMBLIST: Combined IMS and Connect List report

The Combined IMS and Connect List report lists all IMS Connect transactions, providing IMS Connect and IMS log information in a single report. You can use sample report form **COMBLIST** to format this report.

For each transaction you can identify both IMS Connect and IMS system latencies that may be the cause of excessive response time. Only transactions identified in the IMS Connect Extensions journal are reported. If the associated transaction from the IMS log is located then the combined information is reported as a single IMS Connect transaction instance. If the associated transaction from the IMS log is not located then the IMS Connect transaction is reported but with IMS system information missing from the report.

COMBSUMM: Combined IMS and Connect Summary report

The Combined IMS and Connect Summary report summarizes IMS Connect transaction activity, providing IMS Connect and IMS log information in a single report. You can use sample report form **COMBSUMM** to format this report.

For each transaction code, the number of transactions processed is reported enabling you to identify both IMS Connect and IMS system latencies that may be the cause of excessive response time. Only transactions identified in the IMS Connect Extensions journal are reported. If the associated transaction from the IMS log is located then the combined information is reported as a single IMS Connect

transaction instance. If the associated transaction from the IMS log is not located then the IMS Connect transaction is reported but with IMS system information missing from the report.

COMPLVL: Transaction Completion Summary report

The Transaction Completion Summary report provides a breakdown of transaction activity on the IMS log for each region type, such as MPP, BMP. The breakdown by completion level indicates for each type of transaction, how far they progressed towards completing. You can use sample report form **COMPLVL** to format this report.

The following completion levels indicate how transactions were processed:

0 System generated output messages, not related to transaction activity, reported by IMS PA for completeness when analysis of overall message activity is being performed.

1 Transaction input messages remain on the input queue but have not been processed by a dependent region. This could indicate that no dependent regions are eligible or available to process this transaction code.

2 Transactions are being processed by a dependent region but have not completed. This usually indicates long running transactions or transactions at the end of the log that have not completed.

3 Transactions have finished processing in the dependent region but the output message has not been sent. This could indicate that the output LTERM is not available to receive messages.

4 Transactions have completed processing, but the dependent region schedule has not terminated (type 07 log record is not available). This usually indicates that the transactions were processed by long running WFI or pseudo-WFI regions. IMS PA attempts to wait until the schedule is completed before reporting a completed transaction, but virtual storage constraints in the IMS PA batch job cause it to report transactions without their type 07 accounting statistics (completion level 5). All transit time information is available for these transactions, however CPU usage and DB/DC DLI call counts obtained from the type 07 application termination records are not available.

5 Transactions have completed processing, and the dependent region schedule has terminated (type 07 log record is available). Information about the transaction is available for reporting, including CPU usage and DB/DC call counts, but are *approximations* only. Type 07 application termination record statistics are apportioned equally amongst all transactions processed by the program schedule.

6 Transactions have ended and accurate resource utilization statistics are available. For Unit-of-Recovery (UOR) transactions, resource utilization statistics are derived from the type 56FA transaction-level accounting record. This record provides accurate and reliable information for each Unit-of-Recovery (UOR). Resource statistics for transactions reported over the entire schedule are taken from the type 07 record. This includes DBCTL, ODBM, and non-message driven BMP transactions.

All application statistics fields are available for reporting.

CONNACK: Connect ACK/NAK Summary report

The Connect ACK/NAK Summary report summarizes IMS Connect transaction acknowledgement activity. You can use sample report form **CONNACK** to format this report.

For each transaction code, the number of transactions processed is reported and the IMS and client acknowledgement counts provide an indication of the number of transactions that were either positively or negatively acknowledged. Acknowledgement must be provided by:

- IMS to indicate that the transactions was either successfully processed (ACK) or failed to complete successfully (NAK)
- For SYNCLEVEL=CONFIRM only, the Connect client must either accept the transaction response (ACK) or reject it (NAK).

CONNLIST: Connect Transit Log report

The Connect Transit Log report lists all transactions processed by IMS Connect. You can use sample report form **CONNLIST** to format this report.

The report highlights identification information including transaction code, datastore and start time, as well as a breakdown of response time into its transit time components.

CONNPLEX: Connect PLEX Usage Summary report

The Connect PLEX Usage Summary report provides a high-level breakdown of Connect transaction activity across all your IMS Connect systems and IMS datastores. You can use sample report form **CONNPLEX** to format this report.

For each IMS Connect system, transaction activity and performance is reported for every IMS datastore that processes transactions on behalf of the Connect system.

CONNTCOD: Connect Analysis by Trancode report

The Connect Analysis by Trancode report provides a breakdown of IMS Connect transaction performance by transaction code. You can use sample report form **CONNTCOD** to format this report.

For each transaction code you can see at a glance how the transaction performed, and if necessary identify the phase of processing that caused excessive response time in IMS Connect, including Socket IO, message exit and SAF processing, OTMA, and client acknowledgement.

CPUHIGH: High CPU Usage Transactions report

The High CPU Usage Transactions report provides an analysis of transaction CPU usage by reporting the highest CPU times first. You can use sample report form **CPUHIGH** to format this report.

Instead of reporting in the usual transaction code sequence, the report is sorted in descending CPU time sequence so those transactions with the highest CPU usage can be easily identified.

DASH: Transaction Dashboard report

The Transaction Dashboard report provides a high-level overview of the type of activity in your IMS environment. You can use sample report form **DASH** to format this report.

Transaction activity is broken down by region type (such as MPP, BMP) and transaction type (OTMA, IMS Connect, APPC MSC).

DBCTLIST: DBCTL List report

The DBCTL List report lists DBCTL transactions, their performance characteristics, and CICS identification information. You can use sample report form **DBCTLIST** to format this report.

DBCTSUMM: DBCTL Summary report

The DBCTL Summary report summarizes DBCTL transaction activity. You can use sample report form **DBCTSUMM** to format this report.

It summarizes transaction activity information detailed in sample report form "DBCTLIST: DBCTL List report."

FPANAL: Fast Path Transit Analysis by Trancode Summary report

The Fast Path Transit Analysis by Trancode Summary report provides a summary of transaction activity grouped by transaction code and Fast Path routing code. You can use sample report form **FPANAL** to format this report.

It is recommended to use TRANMIX(4) with this report to include transactions that use Fast Path (EMH and DEDB).

FPBUFUSE: Fast Path Buffer Usage Summary report

The Fast Path Buffer Usage Summary report provides a summary of Fast Path buffer usage grouped by transaction code, Fast Path routing code, and region job name. You can use sample report form **FPBUFUSE** to format this report.

It is recommended to use TRANMIX(4) with this report to include transactions that use Fast Path (EMH and DEDB).

FPDBCALL: Fast Path Database Calls Summary report

The Fast Path Database Calls Summary report provides a summary of Fast Path database call activity grouped by transaction code, Fast Path routing code, and region job name. You can use sample report form **FPDBCALL** to format this report.

It is recommended to use TRANMIX(4) with this report to include transactions that use Fast Path (EMH and DEDB).

FPLOG: Fast Path Transaction Transit Log List report

The Fast Path Transit Log list report provides a list of Fast Path transactions with transaction syncpoint time, originating LTERM, and Fast Path-specific and general performance indicators.

The Fast Path Transit Log list report is the forms-based equivalent of the Fast Path Log report. It is recommended to use TRANMIX(4) with this report to include transactions that use Fast Path (EMH and DEDB). You can use sample report form **FPLOG** to format this report.

FPMSG: Fast Path Message Statistics Summary report

The Fast Path Message Statistics Summary report provides a summary of Fast Path message statistics grouped by transaction code and Fast Path routing code. You can use sample report form **FPMSG** to format this report.

It is recommended to use TRANMIX(4) with this report to include transactions that use Fast Path (EMH and DEDB).

FPRESUSE: Fast Path Resource Usage Summary report

The Fast Path Resource Usage Summary report provides a summary of Fast Path resource usage grouped by transaction code, Fast Path routing code, and region job name. You can use sample report form **FPRESUSE** to format this report.

Resources reported include VSO, buffers, GET and UPDATE counts. It is recommended to use TRANMIX(4) with this report to include transactions that use Fast Path (EMH and DEDB).

FPTRANX: Fast Path Transaction Exception - Basic List report

The Fast Path Transaction report provides information about IMS Fast Path (IFP) transactions, and message queue transactions, that use Fast Path databases. You can use sample report form **FPTRANX** to format this report.

The Fast Path Transaction report is the forms-based equivalent of the Fast Path Transaction Exception report. It is recommended to use TRANMIX(4) with this report to include transactions that use Fast Path (EMH and DEDB). You can use sample report form **FPTRANX** to format this report.

FPTRANXD: Fast Path Transaction Exception - Detailed List report

This version of the Fast Path Transaction Exception report provides very detailed information about Fast Path calls and buffer usage.

It is recommended to use TRANMIX(4) with this report to include transactions that use Fast Path (EMH and DEDB). You can use sample report form **FPTRANXD** to format this report.

MSGLEN: Message Length Analysis report

The Message Length Analysis report shows for each transaction code, statistical information about the number and length of all input and output messages. You can use sample report form **MSGLEN** to format this report.

QTYPE: Queue-type Summary report

The Queue Type Summary report provides a breakdown of how transactions are processed in a shared queues sysplex environment. For each region type, you can see at a glance the performance characteristics of transactions processed globally versus those processed locally in a shared queues environment. You can use sample report form **QTYPE** to format this report.

You can compare input queue times for transactions that were processed locally against those that required putting onto the CQS shared queue for processing on the back-end system.

RESPDIST: Response Time Distribution % report

The Response Time Distribution % sample report form, **RESPDIST**, generates a report that shows the percentage of transactions within a series of pre-defined ranges. You can use this sample form to create your own report that, for example, shows the percentage of transactions with a response time within a required service level.

Range values (distributions) can be reported as counts or percentages.

SMQLIST: SMQ Transaction Transit Log report

The SMQ Transaction Transit Log report lists all transactions processed in a shared queues sysplex environment. The report highlights standard transit information, information specific to sysplex processing including the originating and processing systems, and time spent by the input and output messages on the shared message queue.

This report is the equivalent of the Transaction Transit Log report, shared queues version. You can use sample report form **SMQLIST** to format this report.

SMQTCOD: SMQ Transaction Analysis report

The SMQ Transaction Analysis report summarizes transaction activity in a shared queues sysplex environment. You can use sample report form **SMQTCOD** to format this report.

For each transaction code, the number of transactions processed and standard transit information is reported. Information specific to sysplex processing including originating and processing systems, as well as time spent by the input and output messages on the shared message queue is also reported.

This report summarizes the detailed information in the List report generated using report form SMQLIST.

SYNCCOUT: Synchronous Callout List report

The Synchronous Callout List report provides a detailed analysis of synchronous callout activity in regions and by application programs.

You can create a Synchronous Callout report in IMS Performance Analyzer by using a Form-Based Transaction Transit report. Use the IMSPALOG batch command with either the LIST or SUMMARY operands together with one or more of the following FIELDS:

- ICALCNT
- SCOACKCT
- SCOACKTM
- SCONAKCT
- SCONAKTM
- SCOCALCT
- SCOCALTM
- SCOEXTCT
- SCOEXTTM

TRANCLAS: Transit Analysis by Class report

The Transit Analysis by Class report provides a breakdown of transaction transit performance by transaction class, as specified by the TRANSACT macro MSGTYPE parameters. You can use sample report form **TRANCLAS** to format this report.

TRANINTV: Interval Transaction Analysis report

The Interval Transaction Analysis report summarizes transaction activity for each user-specified time interval. You can use sample report form **TRANINTV** to format this report.

For example, the performance characteristic of each transaction is reported for every 15 minute interval during the day so that you can identify how transaction performance varies over time.

TRANLIST: Transaction Transit Log report

The Transaction Transit Log report lists all transactions processed by IMS systems including shared queues sysplexes. You can use sample report form **TRANLIST** to format this report.

The report provides identification information including transaction code, user id and start time, as well as a breakdown of IMS response time into its transit time components. This report form is the equivalent of the Transaction Transit Logreport.

TRANPRTY: Transit Analysis by Priority report

The Transit Analysis by Priority report provides a breakdown of transaction transit performance by transaction priority, as specified in the TRANSACT macro PRTY parameter. You can use sample report form **TRANPRTY** to format this report.

TRANRESU: Transaction Resource Usage report

The Transaction Resource Usage report provides, for each transaction code, a breakdown of IMS response time together with resource usage including CPU time and DB/DC DLI call activity. You can use sample report form **TRANRESU** to format this report.

TRANTCOD: Transit Analysis by Trancode report

The Transit Analysis by Trancode report provides a breakdown of transaction transit performance by transaction code. For each transaction code you can see at a glance how the transaction performed, and if necessary identify the phase of processing that caused excessive response time. You can use sample report form **TRANTCOD** to format this report.

SWITLIST: Transaction Program-Switch List report

The Program Switch List report examines program switches in transactions processed by IMS. PGMSWIT is an important field that clearly shows the program switch sequence.

Note: To track transactions involved in program switch sequences, ensure the Transaction Transit option for program switches is set to 2, that is PROGRAMSWITCH(YES).

SWITSUMM: Program-Switch Summary report

The Program Switch Summary report provides an analysis of transaction transit performance by transaction code. The report form uses field ORGTRAN to group all program switch transactions by their originating transaction code.

TRANRES1: Transaction Resource Usage report

The Transaction Resource Usage report provides, for each transaction code, an analysis of IMS response time together with resource usage including CPU time, and database(DB) and data communications(DC) call activity.

TRANRESD: Transaction Resource Usage DLI Call Summary report

The Transaction Resource Usage DLICall Report provides, for each transaction code, a summary of IMS database(DB) and data communications(DC) calls, together with resource usage including CPU time.

OLRLIST: HALDB Online Reorg List report

You can use the HALDB Online Reorg List report to show HALDB Online Reorganization (OLR) statistics.

To limit the report output to the relevant programs, you must add selection criteria of Program INC 0* to the report in the report set.

The reason for this requirement is that during online reorganization, IMS dynamically builds a PSB whose name is constructed using the 7-byte HALDB partition name and prefixed with a numeric character zero('0').

Tip: You can further limit the program selection criteria by adding the partition id after the zero (for example, '0PART1*').

OLRSUMM: HALDB Online Reorg Summary report

The HALDB Online Reorg List report shows summarized HALDB Online Reorganization (OLR) statistics. It summarizes the number of high availability large database (HALDB) updates and inserts performed by transactions, which programs were called, and the average total IMS time for each program in the time period you specify.

To limit the report output to the relevant programs, you must add selection criteria of Program INC 0* to the report in the report set.

The reason for this requirement is that during online reorganization, IMS dynamically builds a PSB whose name is constructed using the 7-byte HALDB partition name and prefixed with a numeric character zero('0').

Tip: You can further limit the program selection criteria by adding the partition id after the zero (for example, '0PART1*').

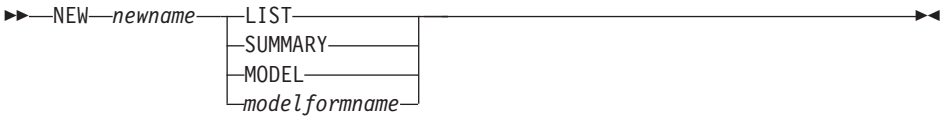
Creating new Report Forms

If you want to create a form-based report or extract that contains your choice of fields, you need to create a Report Form.

Procedure

To create a Report Form:

1. On the IMS PA primary option menu, select option 10 **Report Forms**.
   The Report Forms panel is displayed, showing the list of existing Report Forms.
2. Either:
   - On the command line, enter NEW followed by the name of the new Report Form and initialization details using the following syntax:



   - On the action bar, select **File** > **New**. A pop-up dialog window is displayed.

   This panel prompts you for details of the new Report Form.

   The options are:

   Name The name of the new Report Form. A 1–8 character name in ISPF member name format. The name must be unique within the Report Forms data set.

   Type Select the type of Report Form or model which dictates how the new Form is to be initialized (such as the fields, order, sort sequence). Type is important since a Form can only be used by reports and extracts of compatible type:

   1. List Can be used for the Transaction Transit List report or extract in a LOG, CEX, or TRF Report Set.

   2. Summary
   Can be used for the Transaction Transit Summary report or extract in a LOG, CEX, or TRF Report Set.

   3. Model
   Can be used to model your new Report Form on an existing one.

   Model options:
   If you selected the new Report Form is to be modelled on an existing one, specify the name of the model Report Form and data set where it is stored. **Prompt** (**F4**) is available for both the Report Form data set name and the Report Form member name. The new Report Form will be the same type (List or Summary) and initialized with the same data fields as the model.

   List or Summary options:
   If you chose not to model on an existing form, but selected either type **1. List** or **2. Summary**, you must specify which fields to include in the new Report Form. The choices are:
   - Include IMS fields – for LOG reporting
   - Include Connect fields – for CEX Connect-only reporting
   - Include IMS fields and Connect fields – for CEX Combined reporting
   - Include OMEGAMON TRF fields – for TRF reporting

Specify Field Categories

To help you specify IMS or OMEGAMON TRF fields in your new Report Form, you can select the fields by category.

With this option selected, the user is prompted to select one or more field categories after pressing Enter to create the report form. The following pop-up dialog window is displayed.

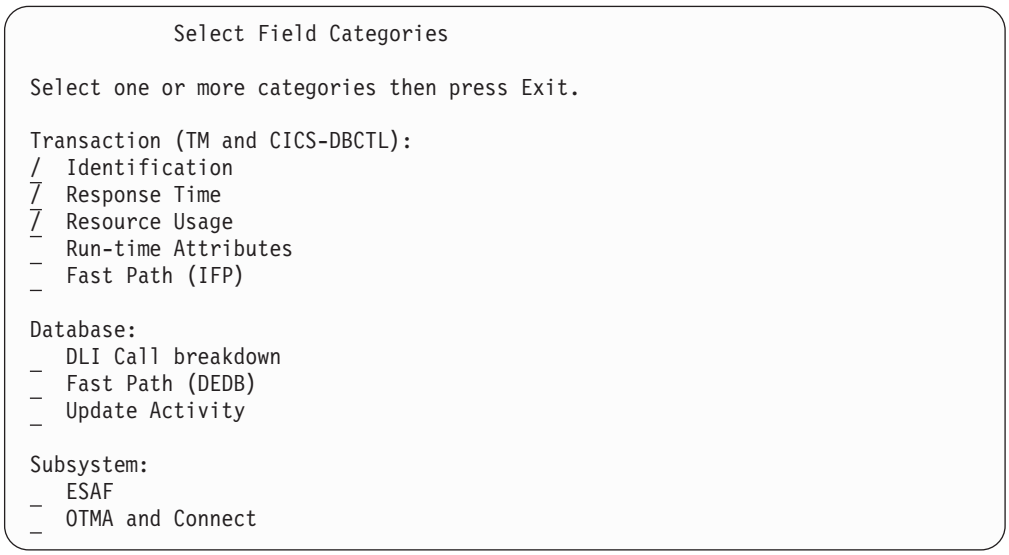


Figure 127. New Report Form: selecting field categories

Select the desired field categories, then press **Exit** (**F3**). The fields in the selected categories are then available in the Report Form. The default field categories are the selection shown in Figure 127: Transaction Identification, Response Time, and Resource Usage.

3. When you have specified all required details, press Enter to create the Report Form.

Specifying Report Form contents

A Report Form contains a list of field names, with additional information depending on the type of Report Form, LIST or SUMMARY.

Procedure

To specify the contents of a Report Form:

1. On the IMS PA primary option menu, select option 10 **Report Forms**.

   The Report Forms panel is displayed, showing the list of existing Report Forms.
2. Either:
   - Create a new Report Form by entering NEW on the command line or by selecting **File** > **New** on the action bar.
   - Select an existing Report Form by entering line action **E** or **S** next to it, or by entering the SELECT command.

   The Report Form Edit panel is displayed.

Tip: Alternatively, you can enter line action **V** to display the Report Form View panel. Viewing a Report Form works in every way like Edit except there is no exclusive hold on the data and changes cannot be saved.

3. Specify the Report Form contents. The contents of a Report Form depends on its type: LIST or SUMMARY.

LIST Report Form

The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.

The LIST Report Form defines the fields to be included, the order of the columns, and a title for the report.

When you select option 10 **Report Forms** from the IMS PA primary option menu, and then select a LIST Report Form to Edit or View, the following view is displayed.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
EDIT                    List Report Form - LIST1              Row 1 to 20 of 60
Command ===> ____________________________________________________ Scroll ===> PAGE

Description . . . Connect Transit Log_____________  Page Width . . . 132
                                                    Precision  . . . 3
                                                    Digit Grouping   NO

   Field
/  Name +   Func  Len  Description
__ STARTCON TIME   12  Connect transaction start time
__ TRANCODE _____   8  Transaction Code
__ TARGDS   _____   8  Target datastore
__ PORT     _____   5  TCP/IP Port number
__ RESPCON  _____   8  Connect response time
__ PREOTMA  _____   8  Total pre-OTMA input time
__ INREAD   _____   8  Input read Socket time
__ READEXIT _____   8  Read message Exit time
__ SAFTIME  _____   8  SAF security call time
__ PROCOTMA _____   8  OTMA processing time
__ CONFIRM  _____   8  Client Confirm time
__ POSTOTMA _____   8  Total post-OTMA output time
__ XMITEXIT _____   8  Transmit message Exit time
__ FAILED   _____   8  Transaction failure indicator
__ EOR      _____      ---------------- End of Report ------------------
__ EOX      _____      ---------------- End of Extract -----------------
__ ACKREAD  _____   8  Acknowledgement read socket time
__ CLIACK   _____   4  Client acknowledgement indicator
__ CLIENTID _____   8  Client ID
__ COMMITMD _____   6  Commit mode
```

Figure 128. LIST Report Form

The LIST Report Form consists of the following:

Description
Specify up to 32 characters of text to describe the purpose of the Report Form and help you distinguish it from others.

Note: IMS PA uses the description as the report title.

Page Width
Page width of the report, in the range 80 to 8000. The default is 132.

When you increase the page width, you can include more fields in the report. Move EOR down the list or move fields above EOR to include the fields of interest. IMS PA automatically adjusts the EOR marker when the fields overflow the page width.

When you view the report output (using SDSF), scroll right to see the additional fields. Note that when you print the report, data that exceeds the maximum printer page width will be truncated.

Precision

Default: 3

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:

- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

Note: Rounding occurs for elapsed and CPU time values.

Precision and digit grouping affect how the field values are represented in the report. Precision and digit grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

Digit Grouping

Default: NO

Digit grouping affects the formatting of time and count fields. Specify the digit grouping as follows:

YES Digit grouping will include the separator character to delineate each group of three digits, aligned to milliseconds for time and 1000 for count. For time fields, the separator is **.** (period). For count fields, the separator is **,** (comma).

NO No digit grouping. Count and time fields will be displayed as whole numbers with no separators.

SEC The separator character will delineate the decimal point only. SEC applies to time fields only and assumes YES for count fields. Use SEC for extracts when time fields must be in seconds and fractions of seconds when importing data into a spreadsheet or database.

Field Name

The IMS PA name for the IMS or Connect field. Press Prompt (F4) to select from a list of fields applicable to this Form type. For the list of available field names, refer to the Chapter 41, "Glossary of Report Form field names," on page 777.

EOR and **EOX** are special entries:

- **EOR** is managed by IMS PA. It signals the end of the report line. The fields listed above **EOR** fit on the report line and are included in the report in the same order as they appear in the list. Those below **EOR** will not be reported and are ignored.

  IMS PA automatically sets **EOR** when the Report Form is created and resets it if necessary when the Form is changed to ensure that the

maximum page width as specified in the **Page Width** field is not exceeded. In positioning **EOR**, IMS PA allows for one blank separator between each field.

To produce a report line shorter than the specified **Page Width**, move **EOR** towards the top of the Form, delete unwanted fields, or move them below **EOR**.

- **EOX** signals the end of the extract record. There are no restrictions on record length so **EOX** can be positioned anywhere in the list. **EOX** is initially positioned just below **EOR**. Fields above **EOX** are included in the extract, those below are ignored. If **EOX** is not specified, **EOR** is used.

Func For time stamp fields STARTIMS and STARTCON, specify the output format:

ISO Full time stamp in the format *yyyy-mm-dd hh.mm.ss.thmiju* where the subsecond format depends on the precision.

DATE Date in the format *yyyy-mm-dd*

TIME Time in the format *hh.mm.ss.thmiju* where the subsecond format depends on the precision. Time is the default applied at run time.

For any field, you can specify **HIDE** to omit it from the report or extract.

Len The length of the field in the report or extract. This is used to calculate the width of the print line.

Description
This is a short description of the field. Enter line action **H** (Help) to see a more detailed description.

Line actions:
The following line actions are valid on this panel:

/ Display the menu of line actions.

S Select a field name from a list of all fields appropriate to the type of Report Form.

I Insert a blank row after this row for entry or selection of another field.

R Repeat this row.

RR Repeat a block of rows bounded by two RRs.

C Copy this row.

CC Copy a block of rows bounded by two CCs.

M Move this row.

MM Move a block of rows bounded by two MMs.

A Move/Copy after this row.

B Move/Copy before this row.

D Delete this row.

DD Delete a block of rows bounded by two DDs.

H Field Help. Display a detailed explanation of the field.

Note: Line operations can span the **EOR** and **EOX** rows. IMS PA will reset **EOR** after the operation has completed to ensure the page width is not exceeded. Only one **EOR** and one **EOX** is retained, that closest to the top of the list. If **EOX** is deleted, **EOR** is assumed to define the length of the extract.

Primary commands:

The following primary commands are valid for the LIST and SUMMARY Report Form panels:

FIND *string*

This command (or F) looks for the specified character string in all columns of displayed data. The string is not case sensitive. The display scrolls to the row where the string is found and positions the cursor on the matching data.

To find more occurrences, use F5 or the RFIND command repeatedly.

If there is no match but the search did not begin at the top of the list, the screen does not change and the message `*Bottom of data reached*` is displayed. Press F5 or enter RFIND to search from the top. If there is no match in the entire list, the screen does not change and a `String not found` message is displayed.

SAVE This command is only available from Edit mode and saves any changes you have made. To save any changes made in View mode, use SAVEAS.

Also available from **File** in the action bar.

SAVEAS *formname* | *datasetname*(*formname*)

This command is available from both Edit and View mode to save the contents of this Report Form under another name, either in the current data set (assumed if no data set name is provided) or in another suitable data set (if the name of a valid PDS is provided).

Also available from **File** in the action bar.

RESET

This command (or RES) removes all outstanding line actions and deletes any blank rows.

Also available from **Edit** in the action bar.

Related reference:

"Transaction Transit List report and extract" on page 320
The options for the Transaction Transit List report and extract are described here.

"LIST: Transaction Transit List report and extract (Form-based)" on page 438
The LIST operand of the IMSPALOG batch command requests the Transaction Transit List report or extract for IMS fields.

"Transaction Transit List report and extract" on page 583
The Form-based Transit List in the CEX Report Set is similar to the Form-based Transit List in the **Log** Report Set.

"LIST: Transaction Transit List report and extract (Form-based)" on page 611
The LIST operand of the IMSPACEX batch command requests the Transaction Transit List report or extract for IMS or Connect fields.

SUMMARY Report Form

The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

The SUMMARY Report Form defines the fields to be included, the order of the columns, sort sequence, and a title for the report.

When you select option 10 **Report Forms** from the IMS PA primary option menu, and then select a SUMMARY Report Form to Edit or View, the following view is displayed.

```
  File  Edit  Options  Help
--------------------------------------------------------------------------------
EDIT                   Summary Report Form - SAMPSUMM   Row 1 of 17  More: < >
Command ===> ____________________________________________________ Scroll ===> PAGE

Description . . . Connect Analysis by TranCode      Page Width . . . 132
                                                    Precision  . . . 3
                                                    Digit Grouping   NO
   Field    Sort
/  Name +   K  O Func  Len Description
__ TRANCODE K  A _____   8 Transaction Code
__ STARTCON K  * TIME      Connect transaction start time
__ TRANCNT     _ _____   8 Transaction count
__ RESPCON     _ AVE     8 Connect response time
__ PREOTMA     _ AVE     8 Total pre-OTMA input time
__ INREAD      _ AVE     8 Input read Socket time
__ READEXIT    _ AVE     8 Read message Exit time
__ SAFTIME     _ AVE     8 SAF security call time
__ PROCOTMA    _ AVE     8 OTMA processing time
__ CONFIRM     _ AVE     8 Client Confirm time
__ POSTOTMA    _ AVE     8 Total post-OTMA output time
__ XMITEXIT    _ AVE     8 Transmit message Exit time
__ EOR         _ _____     ----------------- End of Report ------------------
__ EOX         _ _____     ----------------- End of Extract -----------------
__ ABENDCNT    _ _____   8 Abend count
__ ACKREAD     _ _____   8 Acknowledgement read socket time
__ APPC    K   * _____   4 APPC indicator
```

Figure 129. SUMMARY Report Form: First view

Scroll **Left** (**F10**) or **Right** (**F11**) to see the second view.

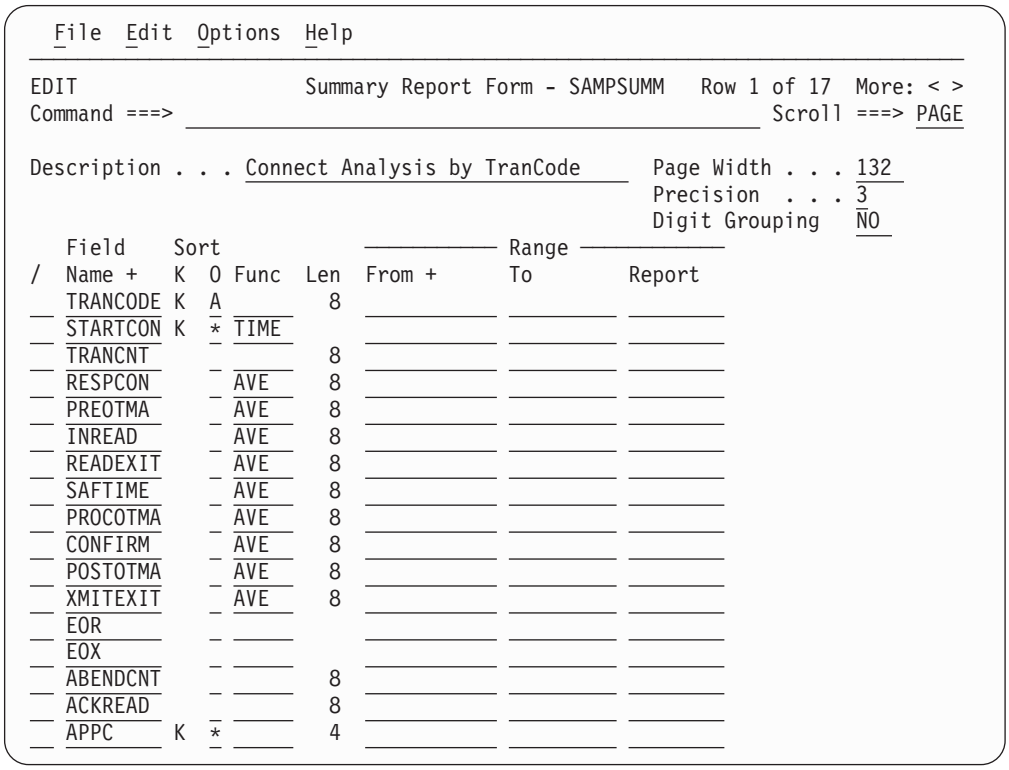


Figure 130. SUMMARY Report Form: Second view

The SUMMARY Report Form consists of the following:

Form Description

Specify up to 32 characters of text to describe the purpose of the Report Form and help you distinguish it from others.

Note: IMS PA uses the description as the report title.

Page Width

Page width of the report, in the range 80 to 8000. The default is 132.

When you increase the page width, you can include more fields in the report. Move **EOR** down the list or move fields above **EOR** to include the fields of interest. IMS PA automatically adjusts the **EOR** marker when the fields overflow the page width.

When you view the report output (using SDSF), scroll right to see the additional fields. Note that when you print the report, data that exceeds the maximum printer page width will be truncated.

Precision

Default: 3

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:
- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

Note: Rounding occurs for elapsed and CPU time values.

Precision and digit grouping affect how the field values are represented in the report. Precision and digit grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

Digit Grouping
Default: NO

Digit grouping affects the formatting of time and count fields. Specify the digit grouping as follows:

YES Digit grouping will include the separator character to delineate each group of three digits, aligned to milliseconds for time and 1000 for count. For time fields, the separator is **.** (period). For count fields, the separator is **,** (comma).

NO No digit grouping. Count and time fields will be displayed as whole numbers with no separators.

SEC The separator character will delineate the decimal point only. SEC applies to time fields only and assumes YES for count fields. Use SEC for extracts when time fields must be in seconds and fractions of seconds when importing data into a spreadsheet or database.

Field rows
One row for each field. The order of the fields in the rows dictates the order of the columns in the report or extract. The fields have the following attributes: Name, Sort Sequence (only certain fields), Statistical Function (clock and count fields only), Length, and Description.

Field Name
The IMS PA field name for the IMS or Connect field. Use **Prompt** (**F4**) to select from a list of fields applicable to this Form type.

EOR and **EOX** are special entries:

- **EOR** is managed by IMS PA. It signals the end of the report line. The fields listed above **EOR** fit on the report line and are included in the report in the same order as they appear in the list. Those below **EOR** will not be reported and are ignored.

  IMS PA automatically sets **EOR** when the Report Form is created and resets it if necessary when the Form is changed to ensure that the maximum page width as specified in the **Page Width** field is not exceeded. In positioning **EOR**, IMS PA allows for one blank separator between each field.

  To produce a report line shorter than the specified **Page Width**, either move **EOR** towards the top of the Form, delete unwanted fields, or move them below **EOR**.
- **EOX** signals the end of the extract record. There are no restrictions on record length so **EOX** can be positioned anywhere in the list. **EOX** is initially positioned just below **EOR**. Fields above **EOX**are included in the extract, those below are ignored. If **EOX** is not specified, **EOR** is used.

Sort Sequence
SUMMARY Sort fields are identified by **K** in the **SORT K** column. The report can be ordered in ascending or descending sequence, as specified in the **SORT O** column, A and D respectively.

Sort fields identify the grouping required for summarization and can be any key field.

A Sort Order of * (asterisk) identifies a candidate sort field, and is ignored for reporting purposes.

To activate a candidate sort field, move it to the top of the Form and set Sort Sequence to A or D.

Key fields above **EOR** must appear first in the list of fields. Key fields below **EOR** are ignored. Up to 8 key fields can be specified, and at least one must be specified. The order of the key fields in the list defines the sort and summarization precedence, with the first key field being the major sort field.

Sort Order
: In addition to the Sort Key fields, one numeric field can be selected as Ascending or Descending to activate Alternate Sequencing. This will change the order of report lines from Sort Key to numeric field sequence. For example, specify Alternate Sequencing of D for RESPIMS to see the IMS transactions with the highest response time at the top of the report. Note that grouping by Sort Key for summarization remains unaffected.

Func The required summary statistical function for time and count fields. The valid functions are:

AVE Average value (this is the default).
DEV Standard deviation.
MAX Maximum value.
MIN Minimum value.
RANGE
: Distribution (count or percent) in specified range.

TOTAL
: Sum total.

nnn Peak percentile *nn*% (for example, 85%).

COUNT
: Number of transactions with a valid field value.

  Note: Completion Level affects whether the field value is available and the disparity (if any) between COUNT and TRANCNT. For example, transaction TRANA executed 1000 times (TRANCNT=1000), but of those transactions, CPU time was only available for 500 of them (CPUTIME COUNT=500). COUNT is used in the calculation of statistics (AVE, DEV, %) so that reported values are not skewed by transactions that do not complete.

For time stamp fields STARTIMS and STARTCON, specify the output format:

TIME Time in the format *hh.mm.ss*. Time is the default applied at run time.

DATE Date in the format *yyyy-mm-dd*

ISO Date and time in the format *yyyy-mm-dd hh.mm.ss*

For any field, you can specify HIDE to omit it from the report or extract.

If specified for a field with A or D sort order, typically ordering fields such as PGMSWIT, the output is sorted on this field but the field itself is not reported. If specified for TRANCNT, the value is calculated but not reported.

Len The length of the field in the report or extract. This is used to calculate the width of the print line.

Field Description
This is a short description of the field. Enter line action **H** (Help) for a more detailed description.

For fields with the RANGE function, the options are:

Range From
For count and time fields, specify a limit value consisting of either a comparison operator followed by a value, or a single value with no operator. For example, specify >=1 for a comparison of greater than or equal to 1. Allowed operators are: `= > >= < <=`

Time fields can be specified in seconds or milliseconds. Use a decimal point to indicate seconds. For example, 1.0 and 1000 represent the same value; 1.0 (1 second) is equal to 1000 milliseconds. The unit of measure (Seconds, Milliseconds) is displayed at the right-hand end of the row.

Count fields are defined as integer fields. That is, only whole numbers are allowed.

For character fields, specify a single value for this field (no operator). Press **Prompt** (**F4**) for a list of valid values. Where a blank or null value is valid, this is selected by the use of the hyphen (-) symbol. The character fields for which the RANGE function is valid are: APPC, CLIACK, COMMITMD, COMPLVL, COMPLVLC, CONVERS, DBACMETH, DBORGTYPE, FAILED, FPPRCTYP, IMSACK, MSC, OTMA, QTYPE, RECOVER, REGTYPE, REJECT, RESPMODE, RESUMETP, STARTLVL, SYNCLEV, TIMEOUT.

Range To
Specify a single upper limit value (no operator). It is required for count and time fields where a lower limit (no operator) has been specified as a From value. It is not allowed when the From value is preceded by a comparison operator. Where From and To values are specified, the range check assumes greater than or equal to (>=) the From value and less than (<) the To value.

It is not valid for character fields.

Report
Whether the reported value is a `COUNT` or a `PERCENT`.

Line actions:
For the list of valid line actions for the SUMMARY Report Form panel, see "LIST Report Form" on page 248.

Primary commands:
For the list of valid primary commands for the SUMMARY Report Form panel, see "LIST Report Form" on page 248.

Related reference:

"Transaction Transit Summary report and extract" on page 327
The Transaction Transit Summary report and extract options are described here.

"SUMMARY: Transaction Transit Summary report and extract (Form-based)" on page 440
The SUMMARY operand of the IMSPALOG batch command requests the Transaction Transit Summary Report or Extract for IMS fields.

"Transaction Transit Summary report and extract" on page 586
The Form-based Transit Summary report is similar to the Form-based Transit List report.

"SUMMARY: Transaction Transit Summary report and extract (Form-based)" on page 613
The SUMMARY operand of the IMSPACEX batch command requests a Transaction Transit Summary Report or Extract for IMS and Connect fields.

Chapter 18. Processing form-based extracts (CSV files)

The IMS PA Form-based Extract feature allows you to extract transaction performance data into comma-separated value (CSV) files suitable for import into DB2 tables or PC-based spreadsheet applications. You can then use your usual reporting tools to create management or operational reports.

See "Transaction Transit reports (Form-based)" on page 318 for a full description of how to create a List or Summary CSV extract from a Log report set. It applies similarly to extracts from Connect or TRF report sets.

It is the same process to create a CSV file whether it is for DB2 or for spreadsheets, except you must specify extract options suitable for the intended purpose.

CSV files for DB2 tables

When requesting List or Summary extracts for exporting to DB2, specify the following options:

```
Extract Options:
_  Include Delimiter                  Delimiter . . , (blank is valid)
_  Include Field Labels
/  Numeric Fields in Float Format
```

Include Delimiter
No. Omit the delimiter for DB2 because the load utility imports fields based on column number and field length defined by the Report Form used to create the extract.

Delimiter
Ignored. The delimiter is only used if **Include Delimiter** is selected, but ensure that you choose a character that is different to the digit-separator used in numeric fields.

Include Field Labels
No. Omit labels for DB2 because the load utility treats them as raw data, not column headings.

Numeric Fields in Float Format
Yes, select FLOAT format for DB2 to enable the load utility to interpret numeric fields reliably and consistently:

- Time fields are in units of seconds. For example, 1.234567 represents 1.234567 seconds.
- Count fields are real numbers. For example, average message length is 100.23 characters.

CSV files for spreadsheets

When requesting List or Summary extracts for importing into PC-based spreadsheet applications, specify the following options:

```
Extract Options:
/  Include Delimiter                  Delimiter . . , (blank is valid)
/  Include Field Labels
_  Numeric Fields in Float Format
```

Include Delimiter
Yes, select to use the specified delimiter to separate fields in the extract records.

Delimiter
Typically a comma, semicolon, or blank. Comma is the default, but ensure that you choose a character that is different to the digit-separator used in numeric fields.

Include Field Labels
Yes, select to include field labels as the first record written to the extract data set to identify the columns and assist reporting.

Numeric Fields in Float Format
No. Spreadsheets expect character-based data. Leave this option blank so numeric fields are extracted in character format according to the Precision and Digit Grouping options.

Exporting form-based CSV extracts to DB2

Create a Report Form, then use it to generate a form-based CSV extract data set from a Log, Connect, or TRF report set. Then from the Report Form, IMS PA automates the process of exporting the CSV extract to DB2 tables.

About this task

- Use a Report Form to specify the performance metrics you want to see.
- Use a List report to keep a record of every transaction that ran, useful for short to medium term problem analysis and reporting.
- Use a Summary report to keep statistical information about transaction performance.
- Run IMS PA nightly via an automated job scheduler. Reports and extracts are created from a single pass of the data. Post-process the extract file to load it directly into DB2.
- Use DB2 as a long term performance database for trend analysis, capacity planning or accounting purposes.

Figure 131 on page 261 shows how to use the IMS PA dialog to create a Form-based extract and export it to DB2.

1 **Report Form:** Create a Form containing the fields you want to export to DB2

```
EDIT                    List Report Form - ALLLIST          Row 1 to 14 of 35
 Command ===> _____________________________________________ Scroll ===> PAGE

 Description . . . List all performance indicators_  Page Width . . . 999
                                                     Precision  . . . 3
                                                     Digit Grouping   NO

    Field
 /  Name +   Func  Len  Description
 __ ORGLTERM _____   8  Originating LTERM
 __ TRANCODE _____   8  Transaction Code
```

2 **Report Set:** Request a Form-based extract using the Form

```
EDIT                        Report Set - SAMPLOG                  Line 11 of 31
 Command ===> _____________________________________________ Scroll ===> PAGE

 Description . . . Sample Log Report Set_____

 Enter "/" to select action.

 ___          ** Reports **                              Active
     -  ___   Transaction Transit Reports (Form-based)   Yes
              S   List                                   Yes
```

```
                        SAMPLOG - Transit List                    More: < >
 Command ===> _____________________________________________________________

 Specify required view:                  ------ Report Interval ------
 2  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
    2. Extract                          From ___________ ____________
                                        To   ___________ ____________

 Extract Data Sets:

    Type     Form +    Extract Data Set Name                          Disp
 1. EXTRACT  ALLLIST   IMSPA.ALLLIST.CSV                              OLD
```

3 **Report Form:** Export the extract to DB2 using the same Form

```
                              Report Forms                Row 1 to 16 of 27
 Command ===> _____________________________________________ Scroll ===> PAGE

 Report Forms Data Set  . . : MYID.IMSPA.FORMS

 /   Name    Type             Description              Changed        ID
 X  ALLLIST  LIST    List all performance indicators  2006/08/30 11:23 MYID
```

```
                        Export LIST Extract to DB2
 Command ===> _____________________________________________________________

 Report Form . . . . . : ALLLIST
 Extract Data Set Name   IMSPA.ALLLIST.CSV_____________________________
```

Figure 131. Export Form-based extract to DB2

Procedure

1. Create a Report Form, then use it to generate a Form-based extract data set from IMS Log or Connect data or combined. See “Creating new Report Forms” on page 245.
2. Having created your Form-based extract data set, IMS PA then automates the process of exporting it into DB2 using a two step process:
   a. Create the DB2 table.
   b. Load the table using the DB2 load utility.

Export List extract to DB2

You can define a LIST Report Form to specify the fields that you want to export to DB2, then use that Report Form to create DDL to define a DB2 table, create a List extract data set, and then load the extracted data into DB2.

Procedure

1. On the IMS PA primary option menu, select option 10 **Report Forms**.

```
                              Report Forms                  Row 1 to 3 of 3
Command ===> _____________________________________________ Scroll ===> PAGE

Report Forms Data Set  . . : IMSPA.FORM3

/   Name    Type              Description               Changed        ID
X  ALLLIST  LIST    List all performance indicators  2014/08/30 11:23 JCH
_  ALLSUMM  SUMMARY Summarize all performance data   2014/09/18 11:24 JCH
_  ALLSUMMX SUMMARY Summarize all performance data   2014/08/30 12:02 JCH
```

Figure 132. Export List extract to DB2: Select Report Form

2. Enter line action **X** to invoke the DB2 export function for the relevant Form. The Export to DB2 panel is displayed.

```
                    Export LIST Extract to DB2
Command ===> ____________________________________________________________

Report Form . . . . . : ALLLIST
Extract Data Set Name   'IMSPA.EXTRACT.DB2L1'

Select option
1  1. Create DDL to define table       2. Load data into table

Create Options                         Load Options
_  Create Database                     2  1. Resume
_  Create Storage Group                   2. Replace

DB2 Settings:
 DB2 Subsystem ID . . . DB2P
 DSNTIAD Plan Name  . . DSNCPAB1
 DB2 Load Library . . . 'DB2.VB10.SDSNLOAD'
 DB2 Exit Library . . . 'DB2.VB10.SDSNEXIT'
 DB2 RUNLIB Library . . 'DSNB10.RUNLIB.LOAD'
 Database . . . . . . . CPADB     Storage Group  . . CPAGRP
 VCAT Catalog name  . . CPA       Volume . . . . . . DATA01
 Allocation: Primary    10        Secondary  . . . . 5

Extract Options:        Summary "Load with Resume" option:
 Precision . . . 3       IPIUTILB Plan Name  . . . . ________

 _  Include Delimiter
    Include Field Labels (Not supported for DB2 load)
 /  Numeric Fields in Float Format (Required for DB2 load)
```

Figure 133. Export List extract to DB2: Specify extract data set

3. Select your export options. Press the **Help** (**F1**) key for additional information on each field.
4. Select option 1 **Create DDL to define table** to generate JCL that will create the DB2 table.

```
000001 //JCH#T440 JOB ,NOTIFY=
000002 //* IMS PA DDL TO DEFINE DB2 TABLE
000003 //RUNTIAD EXEC PGM=IKJEFT01,DYNAMNBR=20
000004 //STEPLIB  DD DISP=SHR,DSN=DB2.VB10.SDSNLOAD
000005 //         DD DISP=SHR,DSN=DB2.VB10.SDSNEXIT
000006 //SYSTSPRT DD SYSOUT=*
000007 //SYSTSIN  DD *
000008  DSN SYSTEM(DB2P)
000009  RUN PROGRAM(DSNTIAD) -
000010      LIB('DSNB10.RUNLIB.LOAD') PLAN(DSNCPAB1)
000011 /*
000012 //SYSPRINT DD SYSOUT=*
000013 //SYSUDUMP DD SYSOUT=*
000014 //SYSIN    DD *
000015    CREATE TABLESPACE ALLLIST
000016    . . .
000017
000018    CREATE TABLE CPADB.ALLLIST (
000019          ORGLTERM       CHAR(8),
000020          TRANCODE       CHAR(8),
000021          PROGRAM        CHAR(8),
000022          IMSID          CHAR(8),
000023          PSTID          CHAR(4),
000024          QTYPE          CHAR(6),
000025          REGTYPE        CHAR(3),
000026          CLASS          CHAR(3),
000027          PRIORITY       CHAR(2),
000028          STARTIMS_TIME  TIME,
000029          CPUTIME        FLOAT,
000030          USERID         CHAR(8),
000031          LTERMOUT       CHAR(8),
000032          INPUTQ         FLOAT,
000033          PROCESS        FLOAT,
000034          OUTPUTQ        FLOAT,
000035          OUTPUTG        FLOAT,
000036          OUTPUTL        FLOAT,
000037          TOTALTM        FLOAT,
000038          RESPIMS        FLOAT,
                . . .
```

Figure 134. Export List extract to DB2: Create table

5. Submit the job to create the DB2 table.
6. Again from the Export to DB2 panel, select option 1 **Load data into table** to generate JCL that will load the DB2 table using the DB2 load utility.

   Tip: You can save this JCL into an automated job scheduler to run every night so you can keep long-term performance information for trend analysis, capacity planning, or accounting purposes.

```
000001 //JCH#T440 JOB ,NOTIFY=
000002 //* IMS PA LOAD DATA INTO DB2 TABLE
000003 //DSNUPROC EXEC PGM=DSNUTILB,REGION=0M,
000004 //         PARM='DB2P'
000005 //SYSPRINT DD  SYSOUT=*
000006 //UTPRINT  DD  SYSOUT=*
000007 //SYSUDUMP DD  SYSOUT=*
000008 //SYSREC   DD  DSN=IMSPA.EXTRACT.DB2L1,
000009 //             DISP=SHR
000010 //SYSUT1   DD  UNIT=SYSDA,SPACE=(4000,(20,20),,,ROUND)
000011 //SORTOUT  DD  UNIT=SYSDA,SPACE=(4000,(20,20),,,ROUND)
000012 //SYSIN    DD  *
000013 LOAD DATA REPLACE
000014      INTO TABLE CPADB.ALLLIST (
000015          ORGLTERM       POSITION(1)    CHAR(8),
000016          TRANCODE       POSITION(9)    CHAR(8),
000017          PROGRAM        POSITION(17)   CHAR(8),
000018          IMSID          POSITION(25)   CHAR(8),
000019          PSTID          POSITION(33)   CHAR(4),
000020          QTYPE          POSITION(36)   CHAR(6),
000021          REGTYPE        POSITION(42)   CHAR(3),
000022          CLASS          POSITION(45)   CHAR(3),
000023          PRIORITY       POSITION(48)   CHAR(2),
000024          STARTIMS_TIME  POSITION(50)   TIME EXTERNAL(8),
000025          CPUTIME        POSITION(58)   FLOAT,
000026          USERID         POSITION(66)   CHAR(8),
000027          LTERMOUT       POSITION(74)   CHAR(8),
000028          INPUTQ         POSITION(82)   FLOAT,
000029          PROCESS        POSITION(90)   FLOAT,
000030          OUTPUTQ        POSITION(98)   FLOAT,
000031          OUTPUTG        POSITION(106)  FLOAT,
000032          OUTPUTL        POSITION(114)  FLOAT,
000033          TOTALTM        POSITION(122)  FLOAT,
000034          RESPIMS        POSITION(130)  FLOAT,
000035          DBCALLS        POSITION(138)  FLOAT,
000036          DBGETS         POSITION(146)  FLOAT,
000037          DBUPDATS       POSITION(154)  FLOAT,
000038          DBWAITS        POSITION(162)  FLOAT,
                . . .
```

Figure 135. Export List extract to DB2: Load table

Export Summary extract to DB2

You can define a SUMMARY Report Form to specify the fields that you want to export to DB2 (and how you want their values to be summarized), then use that Report Form to create DDL to define a DB2 table, create a Summary extract data set, and then load the extracted data into DB2.

Procedure

1. On the IMS PA primary option menu, select option 10 **Report Forms**.

```
                              Report Forms                  Row 1 to 3 of 3
Command ===> ____________________________________________ Scroll ===> PAGE

Report Forms Data Set  . . : IMSPA.FORM3

/   Name    Type              Description               Changed        ID
_  ALLLIST  LIST    List all performance indicators  2014/08/30 11:23 JCH
_  ALLSUMM  SUMMARY Summarize all performance data   2014/09/18 11:24 JCH
X  ALLSUMMX SUMMARY Summarize all performance data   2014/08/30 12:02 JCH
```

Figure 136. Export Summary extract to DB2: Select Report Form

2. Enter line action **X** to invoke the DB2 export function for the relevant Form.

```
                    Export SUMMARY Extract to DB2
Command ===> ____________________________________________________________

Report Form . . . . . : ALLSUMMX
Extract Data Set Name   'IMSPA.EXTRACT.DB2S1'

Select option
1  1. Create DDL to define table       2. Load data into table

Create Options                         Load Options
_  Create Database                     1  1. Resume
_  Create Storage Group                   2. Replace

DB2 Settings:
 DB2 Subsystem ID . . . DB2P
 DSNTIAD Plan Name  . . DSNCPAB1
 DB2 Load Library . . . 'DB2.VB10.SDSNLOAD'
 DB2 Exit Library . . . 'DB2.VB10.SDSNEXIT'
 DB2 RUNLIB Library . . 'DSNB10.RUNLIB.LOAD'
 Database . . . . . . . CPADB     Storage Group  . . CPAGRP
 VCAT Catalog name  . . CPA       Volume . . . . . . DATA01
 Allocation: Primary    10        Secondary  . . . . 5

Extract Options:        Summary "Load with Resume" option:
 Precision . . . 3       IPIUTILB Plan Name  . . . . IPIUTILB

 _  Include Delimiter
    Include Field Labels (Not supported for DB2 load)
 /  Numeric Fields in Float Format (Required for DB2 load)
```

Figure 137. Export Summary extract to DB2: Specify extract data set

3. From the Export to DB2 panel, select option 1 **Create DDL to define table**. JCL to create the DB2 table is presented in an edit session.

```
000001 //JCH#T440 JOB ,NOTIFY=
000002 //* IMS PA DDL TO DEFINE DB2 TABLE
000003 //RUNTIAD EXEC PGM=IKJEFT01,DYNAMNBR=20
000004 //STEPLIB  DD DISP=SHR,DSN=DB2.VB10.SDSNLOAD
000005 //         DD DISP=SHR,DSN=DB2.VB10.SDSNEXIT
000006 //SYSTSPRT DD SYSOUT=*
000007 //SYSTSIN  DD *
000008  DSN SYSTEM(DB2P)
000009  RUN PROGRAM(DSNTIAD) -
000010      LIB('DSNB10.RUNLIB.LOAD') PLAN(DSNCPAB1)
000011 /*
000012 //SYSPRINT DD SYSOUT=*
000013 //SYSUDUMP DD SYSOUT=*
000014 //SYSIN    DD *
000015    CREATE TABLESPACE  ALLSUMMX
          . . .
000027
000028    CREATE TABLE CPADB.ALLSUMMX (
000029          STARTIMS_DATE  DATE,
000030          STARTIMS_TIME  TIME,
000031          TRANCODE       CHAR(8),
000032          TRANCNT        FLOAT,
000033          CPUTIME_AVE    FLOAT,
000034          INPUTQ_AVE     FLOAT,
000035          PROCESS_AVE    FLOAT,
000036          OUTPUTQ_AVE    FLOAT,
000037          OUTPUTG_AVE    FLOAT,
000038          OUTPUTL_AVE    FLOAT,
000039          TOTALTM_AVE    FLOAT,
000040          UORTIME_AVE    FLOAT,
000041          RESPIMS_AVE    FLOAT,
000042          DBCALLS_AVE    FLOAT,
000043          DBGETS_AVE     FLOAT,
000044          DBUPDATS_AVE   FLOAT,
000045          DBWAITS_AVE    FLOAT,
000046          DCCALLS_AVE    FLOAT,
000047          FPCALLS_AVE    FLOAT,
                . . .
```

Figure 138. Export Summary extract to DB2: Create table

4. Submit the job to create the DB2 table.
5. Load the data into the DB2 table using IPIUTILB.

   When a Summary extract is loaded into a DB2 table with the Resume option, you can use the IMS PA utility IPIUTILB as an alternative to the DB2 batch utility DSNUTILB. If DSNUTILB is used and the extract has a duplicate key to an existing row in the DB2 table, the DB2 load (with resume) of the Summary extract will fail. Duplicate key situations regularly occur when there is an overlapping time interval from one IMS log to the next.

   However, if you specify the IPIUTILB plan name, the IPIUTILB module is used instead. Rather than failing, it detects the duplicate key and accumulates the extract record to the DB2 table row.

   To use IPIUTILB, you must first bind the DB2 plan. Sample JCL is supplied in member IPIDB2BD in the SIPISAMP library. See “Export to DB2: Bind DB2 Plan” on page 746.

```
//IMSPA    JOB,NOTIFY=&SYSUID
//*
//BIND EXEC PGM=IKJEFT01
//*
//STEPLIB DD DISP=SHR,DSN=dsn.dsnload
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
DSN SYSTEM(ssid)
BIND PACKAGE(package) -
MEMBER(IPIDBRMU) -
LIBRARY('IPI.V4R4M0.SIPISAMP') -
VALIDATE(BIND) -
ISOLATION(CS) -
RELEASE(COMMIT)
BIND PLAN(DB2plan) -
PKLIST(package.*) -
ACQUIRE(USE) -
ACTION(REP) -
RETAIN
/*
```

Figure 139. IPIDB2BD: Sample JCL to create the DB2 package required to run the alternative load utility IPIUTILB

From the Export to DB2 panel, select option 2 **Load data into table** and select load option 1 **Resume**. The JCL to load the DB2 table is built to use the IMS PA utility IPIUTILB.

```
000001 //JCH#T440 JOB (ACCOUNT),'NAME'
000002 //* IMS PA LOAD DATA INTO DB2 TABLE
000003 //IPIUPROC EXEC PGM=IPIUTILB,REGION=0M,
000004 //         PARM='DB2P,IPIUTILB'
000005 //STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,
000006 //             DISP=SHR
000007 //SYSPRINT DD  SYSOUT=*
000008 //UTPRINT  DD  SYSOUT=*
000009 //SYSUDUMP DD  SYSOUT=*
000010 //SYSREC   DD  DSN=IMSPA.EXTRACT.DB2S1,
000011 //             DISP=SHR
000012 //SYSIN    DD  *
000013 LOAD DATA RESUME YES
000014      INTO TABLE CPADB.ALLSUMMX (
000015          STARTIMS_DATE  POSITION(1)    DATE EXTERNAL(10),
000016          STARTIMS_TIME  POSITION(11)   TIME EXTERNAL(8),
000017          TRANCODE       POSITION(19)   CHAR(8),
000018          TRANCNT        POSITION(27)   FLOAT,
000019          CPUTIME_AVE    POSITION(35)   FLOAT,
000020          INPUTQ_AVE     POSITION(43)   FLOAT,
000021          PROCESS_AVE    POSITION(51)   FLOAT,
000022          OUTPUTQ_AVE    POSITION(59)   FLOAT,
000023          OUTPUTG_AVE    POSITION(67)   FLOAT,
000024          OUTPUTL_AVE    POSITION(75)   FLOAT,
000025          TOTALTM_AVE    POSITION(83)   FLOAT,
000026          UORTIME_AVE    POSITION(91)   FLOAT,
000027          RESPIMS_AVE    POSITION(99)   FLOAT,
000028          DBCALLS_AVE    POSITION(107)  FLOAT,
000029          DBGETS_AVE     POSITION(115)  FLOAT,
000030          DBUPDATS_AVE   POSITION(123)  FLOAT,
000031          DBWAITS_AVE    POSITION(131)  FLOAT,
000032          DCCALLS_AVE    POSITION(139)  FLOAT,
000033          FPCALLS_AVE    POSITION(147)  FLOAT,
                . . .
```

Figure 140. Export Summary extract to DB2: Load table using IPIUTILB

You can save this JCL into an automated job scheduler to run every night so you can keep long-term performance information for trend analysis, capacity planning, or accounting purposes.

Exporting form-based CSV extracts

You can File Transfer extract data sets onto your workstation and import the file into a PC-based reporting tool such as IBM Lotus Symphony Spreadsheets or Microsoft Excel.

List extract

The Transaction List extract creates a data set that contains a list of all transactions and their performance metrics.

The job output provides a recap of the extract:

```
                    IMS Performance Analyzer
                 List all performance indicators

LIST0002 Printed at 11:37:35 13Sep2014     Data from 10.41.59 26Jun2014
LISX0002 Extract has completed successfully
         Data Set Name . . . . IMSPA.EXTRACT.L1
         Record count  . . . .       3,735
```

Figure 141. List extract: Recap report

The extract data set is in CSV format, ready for exporting to DB2 or a PC spreadsheet.

Org LTERM	Trancode	Program	PST	Cls	Pr	DB Call Count	IMS Tran Start	CPU Time	Userid	Output LTERM	InputQ Time	Process Time	OutputQ Time	Total IMS Time	IMS Resp Time
8802	IVTCV	DFSIVP3	1	1	1	1	13.49.03.044	2	CEX001	8802	0	18	0	19	16
8802	IVTCV	DFSIVP3	1	1	1	1	13.49.03.345	1	CEX001	8802	0	13	0	13	11
8802	IVTCV	DFSIVP3	1	1	1	1	13.49.03.646	2	CEX001	8802	0	8	0	8	6
8802	IVTCV	DFSIVP3	1	1	1	0	13.49.03.948	1	CEX001	8802	0	6	0	7	4
8803	IVTCV	DFSIVP3	1	1	1	1	13.49.03.997	1	CEX001	8803	0	7	0	7	5
8803	IVTCV	DFSIVP3	1	1	1	1	13.49.04.249	1	CEX001	8803	0	7	0	7	5
8803	IVTCV	DFSIVP3	1	1	1	1	13.49.04.550	1	CEX001	8803	0	7	0	7	5
8803	IVTCV	DFSIVP3	1	1	1	1	13.49.04.852	1	CEX001	8803	1	8	0	9	5

Figure 142. List extract: PC spreadsheet

Summary extract

The Transaction Summary extract creates a data set that contains a summary of transaction activity including their performance metrics.

The job output provides a recap of the extract:

```
                      IMS Performance Analyzer
                     Summarize all performance data

SUMM0002 Printed at 11:37:35 13Sep2014     Data from 10.40.00 26Jun2014
                                                  to 10.41.59 26Jun2014

SUMX0002 Extract has completed successfully
         Data Set Name . . . . IMSPA.EXTRACT.S1
         Record count  . . . .          26
```

Figure 143. Summary extract recap

The extract data set is in CSV format, ready for exporting to DB2 or a PC spreadsheet.

IMS Tran Start	Trancode	Tran Count	CPU Time Avg	InputQ Time Avg	Process Time Avg	OutputQ Time Avg	Total IMS Time Avg	IMS Resp Time Avg
10.40.00	TPCCB0	52	20	8	153	0	150	148
10.40.00	TPCCB1	35	20	13	100	0	96	94
10.40.00	TPCCB2	49	20	15	145	0	137	132
10.40.00	TPCCB3	60	20	12	176	0	168	165
10.40.00	TPCCB4	49	20	14	116	0	108	101
10.40.00	TPCCB5	69	20	7	112	0	108	103
10.40.00	TPCCB6	42	20	12	134	0	134	127

Figure 144. Summary extract: PC spreadsheet

Chapter 19. IMS Transaction Index

The IMS Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS log about that transaction.

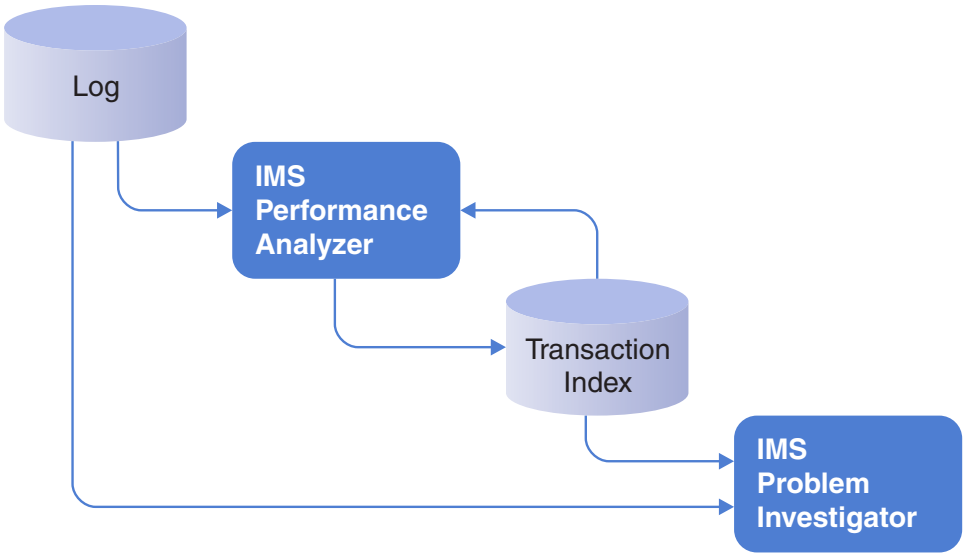


Figure 145. Creating and using the IMS Transaction Index

Uses of the IMS Transaction Index

You can use an IMS Transaction Index in the following ways: as input for IMS Performance Analyzer transit reporting; for display in the IMS Problem Investigator or Transaction Analysis Workbench log browser; and as input for your own reports.

- IMS Performance Analyzer (IMS PA) form-based transit reporting.

  The IMS Transaction Index can replace the IMS log (SLDS) files as input for transit reporting. This significantly reduces the time and overhead of running IMS Performance Analyzer transit reports. It is recommended that you create the index once, either:

  – At the end of the day in preparation for the next day.
  – When the SLDS is created by the OLDS archive process for more timely analysis.

  All subsequent transit report requests can use the index in place of the original IMS log files. The index will create reports in far less time because:

  – The index is much smaller than the original log files, typically less than 10% in size.
  – The IMS log records have already been interpreted, and all transaction report fields and performance metrics have been calculated and stored in the index.
- IMS Problem Investigator (IMS PI) or Transaction Analysis Workbench intelligent problem detection.

The IMS Transaction Index can be processed on its own or merged with the associated IMS log files in an interactive diagnosis session to provide improved levels of problem detection. For example, “Locate all transactions with response time greater than 1 second”.

- Generating your own reports using your favorite z/OS or PC-based reporting tool.

IMS Transaction Index record format and contents

The IMS Transaction Index record has the format of an IMS user log record, with a record code of X'CA01'. The record mapping is provided by macro IPILCA01 in the IMS Performance Analyzer macro library.

To review the contents of the index record, see “Displaying IMS Transaction Index record contents” on page 281 or macro IPILCA01. Alternatively, use IMS PA primary option menu option 10 **Report Forms** to create a new report form to view all the available transaction-level information that can be reported using form-based transit reporting.

The index record contains the information required to report all supported IMS Performance Analyzer report form fields, including:

1. Transaction identification
   - Transaction code, terminal, and other identifying names
   - Time stamp of when the transaction started or entered the system
   - All transaction types are comprehensively supported; including MPP, BMP, Fast Path, MSC (end-to-end), APPC (including CPI-CI), OTMA (including Connect and MQ)
2. Tracking tokens
   - Tracking, unit of work, OTMA, Connect and other identifying tokens
3. Event time stamps
4. Performance metrics
   - Transit and response time breakdown
   - Processing delays, including Commit Mode 0 and 1 delays incurred while waiting for client acknowledgement
   - Additional response time components, including Resume Tpipe elapsed time delays
   - ABEND and other processing failure indicators
5. Resource usage
   - CPU time
   - Full Function and Fast Path database calls
   - Database buffer, IO and locking
   - Fast Path buffer, VSO and contention
   - External subsystem
   - Input and output message count and lengths

The inherent restrictions of form-based reporting still apply when using the IMS Transaction Index:

1. The type 07 application termination accounting record is required to provide resource usage estimates. In a WFI environment, these records may not be available in the log.

2. IMS V12+ type 56FA transaction-level accounting records are required for accurate and complete resource usage statistics.

Creating and using the index for reporting

These topics explain how to create and report the IMS Transaction Index using IMS Performance Analyzer.

Creating an IMS Transaction Index

The IMS Transaction Index is requested from an IMS Performance Analyzer LOG report set and associated INDEX batch command.

Procedure

1. From the IMS Performance Analyzer primary option menu, select option **3 Report Sets** and then define a new log report set or edit an existing one.
2. From the log report set edit menu, select **Transaction Index** in the form-based transit reports category.

```
EDIT                       Report Set - SAMPLOG                  Line 1 of 12
Command ===> ____________________________________________ Scroll ===> CSR

Description . . . Sample Log Report Set

Enter "/" to select action.

___           ** Reports **                            Active
    +  ___    Options                                    Yes
    +  ___    Transaction Transit Reports                No
    -  ___    Transaction Transit Reports (Form-based)   Yes
              ___  Transit Options                       Yes
              ___  List                                  No
              ___  Summary                               No
              s__  Transaction Index                     Yes
    +  ___    Resource Usage & Availability Reports      No
    +  ___    Fast Path Transit Reports                  No
    +  ___    Fast Path Resource Usage Reports           No
    +  ___    Trace Reports                              No
       ___    User-Written Reports                       No
              ** End of Reports **
```

Figure 146. IMS PA Log Report Set: Select **Transaction Index**

3. Specify the name and disposition of the Transaction Index output data set. Optionally, select additional data sections to include in the index.

```
                        SAMPLOG - Transaction Index
Command ===> RUN_____________________________________________________________

Specify the Transaction Index data set name and disposition.

    Name: 'JCH.WORKSHOP.INDEX'                          Disp: OLD

Optional Sections:
_  ESAF (External Subsystems)
_  Database Update Activity

Exception criteria for transactions:
_  Abended
   Exceeded elapsed time threshold
   _  Processing . . 0.50  seconds (Time in dependent region)
   _  Total  . . . . 1.00  seconds (Input Q + Processing + Output Q)
_  Include all transactions in the program switch sequence

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 LTERM                  ___    ________   _
 Line                   ___    ________   _
 VTAM Node              ___    ________   _
 Class                  ___    ________   _
 User ID                ___    ________   _
```

Figure 147. IMS PA: Specify Transaction Index data set name

4. Enter the RUN command to proceed with the request. When prompted, specify run-time options and press Enter to generate the JCL. The JCL is displayed in the ISPF editor.
5. Batch requests to create the IMS Transaction Index are submitted and processed in the same way as all other Report Set requests. For example, the following JCL generates the index file, writes it to data set JCH.WORKSHOP.INDEX, and also runs three additional reports:

```
//IMSPA    JOB ,NOTIFY=&SYSUID
//*
//IPI      EXEC PGM=IPIMAIN,PARM='V151'
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Input IMS log files
//LIZDE001 DD  DISP=SHR,DSN=JCH.WORKSHOP.IZDE.SLDS
//LIZDF001 DD  DISP=SHR,DSN=JCH.WORKSHOP.IZDF.SLDS
//*  Transaction Index extract file
//IPITXOUT DD  DSN=JCH.WORKSHOP.INDEX,  1
//             DISP=(NEW,CATLG), UNIT=SYSDA,SPACE=(TRK,(1,1),RLSE)
//TXRECAP  DD  SYSOUT=*  2
//SYSPRINT DD  SYSOUT=*
//*  Report Set Command Input
//IPICMD   DD  *
       IMSPALOG  INDEX(        3
                       [ESAF,]    4
                       [DBUPDATE,]
                       [ABEND,]         5
                       [PROCESS(9999),]            default 0.50 seconds
                       [TOTAL(9999),]              default 1.00 seconds
                       [PGMSWI,]
                       [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]   6
                       [INCL(LTERM(list))|EXCL(LTERM(list)),]
                       [INCL(LINE(list))|EXCL(LINE(list)),]
                       [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
                       [INCL(CLASS(list))|EXCL(CLASS(list)),]
```

```
                    [INCL(USERID(list))|EXCL(USERID(list))])
      IMSPALOG  LIST,SUMMARY,IRUR    7
      IMSPALOG  EXECUTE
/*
```

1 DDname IPITXOUT must be specified in the JCL to define the data set that will contain the IMS Transaction Index.

2 Optional: Specify DDname TXRECAP for the Recap report output. If not specified, TXRECAP is allocated automatically.

3 The INDEX batch command requests that the IMS Transaction Index is to be created.

4 Specify ESAF or DBUPDATE or both to request that the index include additional information for external subsystems or database update activity or both.

5 You can specify exception criteria so the index contains only problem transactions:

- Specify ABEND to only include transactions that abended.
- Specify one or both of the following options to only include transactions that exceed the specified elapsed time threshold (0.01 to 9999 seconds).
  - Specify PROCESS to only include transactions that have a processing elapsed time in the dependent region that exceeds the threshold (default 0.50 seconds).
  - Specify TOTAL to only include transactions that have a total transit time that exceeds the threshold (default 1.00 second).
- Specify PGMSWI to include all transactions in the program switch sequence when at least one of them is an exception. This allows you to analyze the complete transaction set that resulted in the exception.

6 Specify selection criteria to filter the input file by including or excluding records based on transaction code, LTERM, line, VTAM node, class, or user ID.

7 Optional additional report requests.

6. Check or change the JCL, then on the ISPF editor command line, enter SUB to submit the job.
7. When the IMS Performance Analyzer batch job has completed successfully, the Recap report gives the name of the IMS Transaction Index data set and the number of records written.

```
                    IMS Performance Analyzer
                      Transaction Index

IPITXOUT Transaction Index completed
         Data Set Name . . . . JCH.WORKSHOP.INDEX
         Record count:
             In . . . . . .       28

             Filtered . . . . .   27
             Exceptions . . . .    3
                Abend . . . . .    1
                Process Time . .   0
                Total time . . .   3

             Out . . . . . .       4
```

8. The IMS Transaction Index is now ready to use.

Using the index for performance reporting

After creating an IMS Transaction Index, you can use it in place of the IMS log (SLDS) files for subsequent form-based transit report requests.

Procedure

Edit the report set JCL to refer to the IMS Transaction Index instead of the IMS log files.
For example, the following JCL shows the IMS log input files replaced by the IMS Transaction Index file (ddname LOGIN). The form-based SUMMARY and LIST report requests will use the index.

```
//IMSPA    JOB ,NOTIFY=&SYSUID
//*
//IPI      EXEC PGM=IPIMAIN,PARM='V151'
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  IMS Transaction Index
//LOGIN    DD  DISP=SHR,DSN=JCH.WORKSHOP.INDEX
//SYSPRINT DD  SYSOUT=*
//*  Report Set Command Input
//IPICMD   DD  *
       IMSPALOG  SUMMARY(SECGROUP,PRECISION(6),
                 FIELDS(TRANCODE,TRANCNT,
                        INPUTQ,PROCESS,OUTPUTQ,TOTAL,CPU))
       IMSPALOG  LIST(SECGROUP,PRECISION(6),
                 FIELDS(LTERM,TRANCODE,STARTIMS,
                        INPUTQ,PROCESS,OUTPUTQ,TOTAL,CPU))
       IMSPALOG  EXECUTE
/*
```

The resulting reports will contain the same information as if they were created from the original IMS log files.

Note: The additional information for external subsystems or database update activity will only be available for reporting if the corresponding options (ESAF, DBUPDATE) were specified when the IMS Transaction Index was created.

IMS PI: Using the index to diagnose transaction problems

After creating an IMS Transaction Index with IMS PA, you can then use it in IMS Problem Investigator to diagnose problem transactions.

The IMS Transaction Index can be analyzed on its own, or in conjunction with the IMS log files used to create it. The index is a useful diagnostic mechanism that provides a summary insight into the dynamics of the transaction and provides a shortcut to the cause of the problem.

Preparing the IMS Transaction Index (optional)

IMS Performance Analyzer cuts index records in the order that transactions complete their transit processing in the IMS log file. It is not sorted in transaction start time sequence.

About this task

IMS Problem Investigator expects log file data to be in time sequence so that:

1. Merging can display results in correct chronological order.
2. Time formatting aids (Relative and Elapsed) can display actual (positive) elapsed time deltas.

3. When merging IMS Transaction Index and IMS log files, the type CA01 index and the type 01 IMS transaction message records from which the index was derived, can be adjacent in the display.

Note: Sorting the index is optional – IMS Problem Investigator can process an unsorted index. You might decide not to sort the index if you are processing it standalone and looking for individual transaction problems or issues, rather than viewing the file as a time line of system activity.

Procedure

If you are using IMS Problem Investigator V2.4 and above, you can use the ISPF dialog to generate JCL to sort the IMS Transaction Index using the ISPF dialog.

1. From the IMS Problem Investigator primary option menu, select option **1 Process**.
2. Enter the data set name of the IMS Transaction Index in the **Log File** column.
3. Enter line action `SORT`.

Example

The following JCL sorts the index file in (message arrival) time sequence using field ISO – the 26 character ISO date and time stamp.

```
//USR JOB (ACCOUNT),'NAME'
//*
//*============================================
//* Sort the IMS transaction index
//*============================================
//SORT     EXEC PGM=SORT
//SORTIN   DD DISP=SHR,
//            DSN=JCH.WORKSHOP.INDEX
//SORTOUT  DD DISP=SHR,
//            DSN=JCH.WORKSHOP.INDEX.SORTED
//SYSOUT   DD SYSOUT=*
//SYSIN    DD *
  SORT FIELDS=(265,26,CH,A)
/*
```

Figure 148. Sample JCL to sort the index in transaction arrival time sequence

IMS Transaction Index records are variable length. The character positions in the SORT statement allows for the first 4 bytes of each record that contain the record descriptor word (RDW).

Starting to process the IMS Transaction Index

To start processing a IMS Transaction Index in IMS Problem Investigator, you specify its data set name on the Process Log Files panel.

Procedure

On the Process Log Files panel, select the IMS Transaction Index, and any other log files that you want to browse.
The following IMS Problem Investigator diagnostic session is started by selecting three files; the (sorted) IMS Transaction Index and the two (shared queue sysplex) SLDS files used to create the index. The files are merged and displayed as if they are a single data source.

```
                          Process Log Files         Row 1 of 3 More: < >
Command ===> ____________________________________________ Scroll ===> CSR

Select a Log File to browse.            IMS Release 121 +     Zone _____

/        Log File                                      Rel + Filter + Zone
S        'JCH.WORKSHOP.INDEX.SORTED'                    ___   CA01   _____
S        'JCH.WORKSHOP.ICDE.SLDS'                       ___   _____  _____
S        'JCH.WORKSHOP.ICDF.SLDS'                       ___   _____  _____
*************************** Bottom of data ******************************
```

Figure 149. IMS PI: merge the IMS Transaction Index and original log files

Notice the initial Filter setting of CA01. This instructs IMS Problem Investigator to display only the IMS Transaction Index records (their type is X'CA01' in the user log record range), hiding all other records from display until they are required.

Tip: Specify the index file before the IMS log files. This will ensure that the CA01 index record is displayed immediately above its associated type 01 IMS input message record.
The following browse panel is the list of all transactions contained in the index, matching the initial filter setting of CA01.

```
BROWSE   JCH.WORKSHOP.INDEX.SORTED                Record 00000285 More: < >
Command ===> FILTER_____________________________________ Scroll ===> CSR
   Forwards / Backwards . . _______________   Time of Day . . 01.10.00.000000
   Code Description               Date 2014-03-17 Monday     Time (LOCAL)
/  ---- ------------------------------------------------------ --------------
__ CA01 Transaction TranCode=CEXTNONC Region=0001              01.09.31.616591
__ CA01 Transaction TranCode=CEXTNONC Region=0002              01.09.44.868338
__ CA01 Transaction TranCode=CEXTNONC Region=0001              01.09.55.133068
__ CA01 Transaction TranCode=CEXTNONC Region=0002              01.10.03.639285
__ CA01 Transaction TranCode=CEXTNONC Region=0001              01.10.49.089426
__ CA01 Transaction TranCode=ATMWDRAW Region=0002              01.10.56.568098
__ CA01 Transaction TranCode=CEXTNONC Region=0001              01.11.22.018775
__ CA01 Transaction TranCode=CEXTNONC Region=0002              01.11.33.341848
__ CA01 Transaction TranCode=CEXTNONC Region=0001              01.11.59.796991
__ CA01 Transaction TranCode=CEXTNONC Region=0001              01.12.38.636555
__ CA01 Transaction TranCode=CEXTNONC Region=0001              01.13.09.386813
   . . .
****************************** Bottom of Data ****************************
```

Figure 150. IMS PI: filtered list of IMS Transaction Index records

Locating the problem transaction using a filter

To narrow down the search for a problem transaction, you can use the navigation aids and filtering criteria.

Procedure

1. Navigate to a point in time in the log file using point-and-shoot to a time of day.
2. Use the FILTER command to change the active filtering criteria. Select the CA01 record in the filter to specify conditions that will help to locate the problem transaction.

```
VIEW                          Filter                     Row 1 of 1 More: < >
Command ===> _____________________________________________ Scroll ===> CSR

Filter  . . . . . ________ +
Description . . . New Log Record Filter_____________  _  Activate Tracking

/ Log Code + Exc Description
S IMS CA01       Transaction
                 Level  1__  Conditions  No_  Form  ________ + REXX  ________
------------------------------------------------------------------------------
****************************** Bottom of data ********************************
```

Figure 151. IMS PI: specify a filter for the IMS Transaction Index CA01

Filtering against the IMS Transaction Index record type allows you to specify conditions based on any attribute of the transaction, including its performance.

The following condition requests that only transactions with a processing time greater than 2 seconds are selected for display.

```
                                Conditions                  Row 1 to 1 of 1
Command ===> _____________________________________________ Scroll ===> CSR

Code: CA01 Transaction

/  Field Name +                    Oper  Value +
_  PROCESS_____________________ GT__  2.0_____________________________
****************************** Bottom of data ********************************
```

Figure 152. IMS PI: specify filter conditions for the IMS Transaction Index CA01

Tracking the problem transaction

When you have located the problem transaction, you can use tracking to view all IMS log records associated with the transaction.

Procedure

Use the **TX** line action against the required IMS Transaction Index record to initiate transaction tracking, as shown in the following figure.

```
BROWSE   JCH.WORKSHOP.INDEX.SORTED                    Record 00000317 More: < >
Command ===> ____________________________________________________ Scroll ===> CSR
   Forwards / Backwards . . _______________   Time of Day . . 01.10.00.000000
   Code Description               Date 2012-03-16 Friday     Time (LOCAL)
/  ---- ------------------------------------------------------ ---------------
__ CA01 Transaction                                           01.09.44.868338
        UTC=17.09.44.868329 TranCode=CEXTNONC Program=CEXTPGM Userid=FUNTRM46
        LTerm=FUNTRM46 Terminal=SC0TCP46 Region=0002
        OrgUOWID=ICDE/BE8300B0685A9642 IMSID=ICDE IMSRel=121
        RecToken=ICDE/0000000300000000
        CPU=199.999949 InputQ=0.007895 Process=2.645721
        TotalTm=2.653616 RegTyp=MPP DBCalls=5
   ------------------------------------------------------------------------
TX CA01 Transaction                                           01.10.56.568098
        UTC=17.10.56.568088 TranCode=ATMWDRAW Program=ATMPROG Userid=NEWYORK
        LTerm=NEWYORK Terminal=NYATM001 Region=0002
        OrgUOWID=ICDE/BE8300F4C92D4A23 IMSID=ICDF IMSRel=121
        RecToken=ICDF/0000000300000000
        CPU=199.999949 InputQ=0.008634 Process=2.564080
        TotalTm=2.572714 RegTyp=MPP DBCalls=5
   ------------------------------------------------------------------------
__ CA01 Transaction                                           01.12.38.636555
        UTC=17.12.38.636547 TranCode=CEXTNONC Program=CEXTPGM Userid=FUNTRM48
        LTerm=FUNTRM48 Terminal=SC0TCP48 Region=0001
        OrgUOWID=ICDE/BE830156203C5B20 IMSID=ICDE IMSRel=121
        RecToken=ICDE/0000000900000001
        CPU=66.666650 InputQ=75.978279 Process=2.186935
        TotalTm=78.165214 RegTyp=MPP DBCalls=3
   ------------------------------------------------------------------------
****************************** Bottom of Data ******************************
```

Figure 153. IMS PI: initiate tracking for the problem transaction

Transaction tracking displays only those records associated with the problem transaction.

Analyzing transaction time line and event latencies

You can use the time formatting provided by IMS Problem Investigator to replay the transaction time line and event latencies.

Procedure

1. Use the **R** line action to display relative time – time since the start of the transaction – as shown in the following figure.

```
BROWSE   JCH.WORKSHOP.INDEX.SORTED                    Record 00000715 More: < >
Command ===> ____________________________________________________ Scroll ===> CSR
   Forwards / Backwards . . _________________ Time of Day . . 01.10.00.000000
   Code Description                Date 2013-03-17 Friday     Time (LOCAL)
/  ---- ------------------------------------------------------ ---------------
R_ CA01 Transaction TranCode=ATMWDRAW Region=0002              01.10.56.568098
__ 01   Input Message TranCode=ATMWDRAW                              +0.000000
__ 35   Input Message Enqueue TranCode=ATMWDRAW                      +0.000016
__ 33   Free Message                                                +0.004522
__ 08   Application Start TranCode=ATMWDRAW Region=0002             +0.006010
__ 5607 Start of UOR Program=ATMPROG Region=0002                    +0.006011
__ 01   Input Message TranCode=ATMWDRAW                             +0.008618
__ 31   DLI GU TranCode=ATMWDRAW Region=0002                        +0.008628
__ 5616 Start of protected UOW Region=0002                          +0.009376
__ 20   Database Open Database=ACCOUNTS Region=0002                 +0.092504
__ 20   Database Open Database=ACCOUNTS Region=0002                 +0.144345
__ 5E   SB Handler requests Image Capture Region=0002               +0.147327
__ 5E   SB Handler requests Image Capture Region=0002               +0.147329
__ 50   Database Update Database=ACCOUNTS Region=0002               +0.196349
__ 50   Database Update Database=ACCOUNTS Region=0002               +0.198155
__ 50   Database Update Database=ACCOUNTS Region=0002               +0.198195
__ 50   Database Update Database=ACCOUNTS Region=0002               +0.198618
__ 50   Database Update Database=ACCOUNTS Region=0002               +0.198678
__ 03   Output Message Response LTerm=NEWYORK                       +2.219906
__ 35   Output Message Enqueue LTerm=NEWYORK Region=0002            +2.219921
__ 37   Syncpoint Region=0002                                       +2.219941
__ 37   Syncpoint message transfer Region=0002                      +2.234516
__ 33   Free Message                                               +2.238445
__ 03   Output Message Response LTerm=NEWYORK                       +2.243091
__ 35   Output Message Enqueue LTerm=NEWYORK                        +2.243123
__ 31   Communications GU LTerm=NEWYORK                            +2.243159
__ 36   Output Message Dequeue LTerm=NEWYORK                       +2.246271
__ 33   Free Message                                               +2.247009
__ 33   Free Message                                               +2.571643
__ 5612 End of Phase 2 Syncpoint Program=ATMPROG                    +2.572706
__ 07   Application Terminate TranCode=ATMWDRAW Region=0002         +2.575399
******************************** Bottom of Data ********************************
```

Figure 154. IMS PI: analyze transaction time line and event latencies

2. Alternatively use the **E** line action to display event latency elapsed times – the elapsed time between log record events.
3. Use the **W** line action to revert back to wall clock time.

Displaying IMS Transaction Index record contents

An IMS Transaction Index record contains all the important information taken from the original log records for the transaction. You can use IMS Problem Investigator to browse the contents of the index records which are processed in the same way as any other log record.

The following figure is an example of an IMS Problem Investigator formatted record display. It shows the formatted contents of all the fields in the IMS Transaction Index record from where you can zoom for more information about any field or switch to view the record contents in dump format.

```
BROWSE     JCH.WORKSHOP.INDEX.SORTED            Record 00000715 Line 00000000
Command ===> ____________________________________________________ Scroll ===> CSR
Form    ===> CA01      +    _ Use Form in Filter                 Format ===> STD
******************************** Top of data ********************************
+0004  Code... CA01  Transaction
+03B8  STCK... BE8300F4C9322443      LSN.... 0000000000000028
       Date... 2012-03-16 Friday     Time... 01.10.56.568098.266

+0000  LL......... 03C8        ZZ......... 0000        Type....... CA
+0005  Subtype.... 01          Vers....... 'IPI440'

+0078  ID......... Transaction Identification section
+0078  TranCode... 'ATMWDRAW'  Program.... 'ATMPROG '
+0088  Userid..... 'NEWYORK '  ITerm...... 'NEWYORK '
+0098  LTerm...... 'NEWYORK '  LTermOut... 'NEWYORK '
+00A8  Terminal... 'NYATM001'  LTermOvr... '        '
+00B8  TMemberO... '        '  ParentTC... '        '
+00C8  FPRoutCd... '        '
+00D0  UTC........ IMS transaction start time (UTC)
+00D0  UTC........ 2012075F1710565680088000C
+00DC  ISO........ IMS transaction start time (local)
+00DC  Date....... '2012-03-15'
+00E7  Time....... '17.10.56.568088'
+00F8  LogonTK.... 0000000000000000                  OtmaSSN.... 00000000
+0104  CommitMd... ' '         SynchLvl... ' '

+0028  Base....... Transaction Tracking section
+0028  Org........ Originating Tracking Unit-of-Work (UOW) ID
+0028  OrgID...... 'ICDE    '  OrgTK...... BE8300F4C92D4A23
+0038  Pro........ Processing Tracking Unit-of-Work (UOW) ID
+0038  ProID...... 'ICDE    '  ProTK...... BE8300F4C92D4A23
+0106  RecToken... C9F9C4C6404040400000000300000000
+0116  IMSFE...... 'ICDE    '  IMSID...... 'ICDF    '  PSTID...... 0002
+0128  TrSeq#..... +1          TSSize..... +1          RegType.... 'MPP'
+0133  JobName.... 'ICDFMSG2'  StepName... 'REGION  '
+0143  DDname..... 'LICDE001'  Class...... 0000        Priority... 08
+014E  PgmSwit.... +0          OrgVRM..... 1210        ProVRM..... 1210

+0158  Transit.... Transaction Transit accounting section
+0158  InputQ..... 0.008634    Process.... 2.564080    OutputQ.... 0
+0170  OutputL.... 0.000038    OutputG.... 0.023201    TotalTm.... 2.572714
+0188  RespIMS.... 2.243167    SwitTime... 0           SchedTm.... 0.002622
+01A8  UORTime.... 2.566692    CM0Delay... 0           CM1Delay... 0
+01C0  OutRTIMS... 0           TotRTIMS... 0
+01D0  CPUtime.... 199.999949  WFItime.... 0           FPEMHIn.... 0
+01E8  FPEMHOut... 0           FPTermOt... 0           FPPh1Ph2... 0

+0200  Events..... Transaction Event Time section
+0200  T01........ 2012-03-15 17.10.56.568088
+0208  StartIMS... 2012-03-15 17.10.56.568088
+0210  T35In...... 2012-03-15 17.10.56.568088
+0218  T08........ 2012-03-15 17.10.56.574100
+0220  T5607...... 2012-03-15 17.10.56.574110
+0228  T31DLI..... 2012-03-15 17.10.56.576722
+0238  T37........ 2012-03-15 17.10.58.788038
+0240  T37Xfer.... 2012-03-15 17.10.58.802611
+0248  T5612...... 2012-03-15 17.10.59.140802
+0250  T07........ 2012-03-15 17.10.59.143494
+0258  T31DLInx... 2012-03-15 17.10.59.140802
+0260  T31Out1.... 2012-03-15 17.10.58.811255
+0268  T31Resp.... 2012-03-15 17.10.58.811255          Local...... +00:00
```

Figure 155. IMS PI: Analyze IMS Transaction Index record contents (part 1 of 2)

```
+0280  Calls...... DB call summary section
+0280  FFCalls.... +5          FFGets..... +2          FFUpdats... +3
+028C  FFWaits.... +0          FFGNs...... +0          FFGUs...... +2
+0298  FPCalls.... +0          FPGets..... +0          FPUpdats... +0
+02A4  FPWaits.... +0          FPGNs...... +0          FPGUs...... +0

+02B0  TPSection.......... Accounting section (07)
+02B0  TPMCNT..... +1
+02B4  TPACCT..... Accounting Statistics
+02B4  TPDGU...... +0          TPDGN...... +0          TPDGNP..... +0
+02C0  TPDGHU..... +2          TPDGHN..... +0          TPDGHNP.... +0
+02CC  TPDISRT.... +1          TPDDLET.... +1          TPDREPL.... +1
+02D8  TPCLCNT.... +5          TPMGU...... +2          TPMGN...... +0
+02E4  TPMISRT.... +1          TPMPURG.... +0          TPTSTNQ.... +0
+02F0  TPTSTWT.... +0          TPTSTDQ.... +0          TPQCONQ.... +0
+02FC  TPQCOWT.... +0          TPQCODQ.... +0          TPSUPNQ.... +0
+0308  TPSUPWT.... +0          TPSUPDQ.... +0          TPEXCNQ.... +0
+0314  TPEXCWT.... +0          TPEXCDQ.... +0          TPMCMD..... +0
+0320  TPMGCMD.... +0          TPMCHNG.... +0          TPMAUTH.... +0
+032C  TPMSETO.... +0          TPSAPSB.... +0          TPSDPSB.... +0
+0338  TPSGMSG.... +0          TPSICMD.... +0          TPSRCMD.... +0
+0344  TPSCHKP.... +0          TPSXRST.... +0          TPSROLB.... +0
+0350  TPSROLS.... +0          TPSSETS.... +0          TPSSETU.... +0
+035C  TPSINIT.... +0          TPSINQY.... +0          TPSLOG..... +0
+0368  TPDDEQ..... +0          TPVSAMR.... +0          TPVSAMW.... +0
+0374  TPOSAMR.... +0          TPOSAMW.... +0          TPTOTIO.... +0
+0380  TPESAF..... +0          TPFLD...... +0          TPPOS...... +0
+038C  TPRLSE..... +0          TPXSAVE.... +0          TPXRSTR.... +0
+0398  TPXCOPY.... +0          TPTDBIO.... 0           TPTDBPL.... 0

+0048  Status..... Transaction Status section
+0048  CompLvl.... '5'         StartLvl... '1'         StaFlag1... DC
+004B  StaFlag2... B0          StaFlag3... 40          StaFlag4... 00
+004E  StaFlag5... 00          StaFlag6... 00          TACFlag1... D0
+0051  TACFlag2... FC          ErrFlag1... 00          ErrFlag2... 00
+0054  MSCFlag1... 40          SMQFlag1... B8          TypFlag1... 08
+0057  TypFlag2... 40          FPFlag1.... 00          FPFlag2.... 00
+005A  ComHI...... '5'         ComLO...... '5'         CompCode... 00000000
+0060  RecCount... +1          MsgLIn..... +424        MsgLOut.... +407
+006C  OutEnq..... +1          OutDeq..... +1          FPBALGct... +0
```

Figure 156. IMS PI: Analyze IMS Transaction Index record contents (part 2 of 2)

Part 5. Log reporting

IMS PA provides both an online dialog and a batch interface. This part describes how to request and run Log reports and extracts using the dialog and batch commands.

Chapter 20. Requesting Log reports

You can use the IMS PA ISPF dialog to specify and request reports generated from IMS log data.

Log Report Sets

Log reports are specified in a Report Set of type LOG.

Report Sets are stored in a Reports Sets data set. If you have not specified a Report Sets data set, IMS PA will allocate a data set for you with default characteristics. To change the Report Sets data set, you can use **Options** in the action bar or option 0.4 **IMS PA Control Data Sets** from the IMS PA primary option menu.

To specify Log Reports:

1. Select option 3 **Report Sets** from the IMS PA primary option menu. A list of the Report Sets in the nominated Report Sets data set is displayed.
2. Define a new Log Report Set or edit an existing one. See "Maintaining Report Sets" on page 125 for information on how to do this.

```
 File  View  Options  Help
──────────────────────────────────────────────────────────────────────────────
                                Report Sets                    Row 1 to 2 of 2
Command ===> ____________________________________________     Scroll ===> PAGE

Report Sets Data Set . . . : IMSPA.RSET

/     Name    Type           Description                Changed        ID
S__   SAMPLOG  LOG  Sample Log Report Set            2018/07/17 12:02 IMSPA
___   SAMPMON  MON  Sample Monitor Report Set        2018/07/02 14:22 IMSPA
****************************** Bottom of data ********************************
```

Figure 157. Selecting a Log Report Set

A panel is then displayed for you to view or modify the description of the Report Set and the reports it contains. Figure 158 on page 288 shows the sample Log Report Set which IMS PA provides if there are no user-defined Report Sets in the Report Set data set.

The list of reports in the Report Set is presented in a tree structure (folder style). The reports are grouped by category.

The Log Report Set Edit panel shows the list of all available log reports options in a tree structure.

The Tree View is a hierarchical representation of the report categories and reports. This is similar to the way some PC tools display folders and files. The **+** or **-** character to the left of each report category shows its current status, expanded (**-**) or collapsed (**+**). This allows you to view only the reports that you are currently interested in, and has no affect on which reports are run when the Report Set is submitted.

```
  File  View  SysDefs  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
 EDIT                      Report Set - SAMPLOG                     Line 1 of 52
 Command ===> ________________________________________________ Scroll ===> PAGE

 Description . . . Sample Log Report Set

 Enter "/" to select action.

 ___         ** Reports **                        Active
      -  ___ Options                                Yes
             ___  Log Global                        Yes
      -  ___ Transaction Transit Reports            Yes
             ___  Transit Options                   Yes
             ___  Analysis                          Yes
             ___  Statistics                        No
             ___  Log                               No
             ___  Graphic Summary                   No
             ___  Extract by Interval               No
             ___  Transaction Exception             Yes
             ___  Transaction History File          No
      -  ___ Transaction Transit Reports (Form-based) No
             ___  Transit Options                   No
             ___  List                              No
             ___  Summary                           No
             ___  Transaction Index                 No
      -  ___ Resource Usage & Availability Reports  Yes
             ___  Dashboard                         Yes
             ___  Management Exception              Yes
             ___  Transaction Resource Usage        No
             ___  Resource Availability             Yes
             ___  CPU Usage                         Yes
             ___  Internal Resource Usage           Yes
             ___  MSC Link Statistics               No
             ___  Message Queue Utilization         No
             ___  Database Update Activity          Yes
             ___  Region Histogram                  No
             ___  OSAM Sequential Buffering         No
             ___  Deadlock                          Yes
             ___  System Checkpoint                 Yes
             ___  BMP Checkpoint                    No
             ___  Gap Analysis                      No
             ___  Cold Start Analysis               No
      -  ___ Fast Path Transit Reports              No
             ___  Transit Options                   No
             ___  Analysis                          No
             ___  Log                               No
             ___  Extract By Interval               No
             ___  Transaction Exception             No
      -  ___ Fast Path Resource Usage Reports       No
             ___  Resource Usage & Contention       No
             ___  Database Call Statistics          No
             ___  IFP Region Occupancy              No
             ___  EMH Message Statistics            No
             ___  DEDB Update Activity              No
             ___  VSO Statistics                    No
      -  ___ ATF Enhanced Summary Reports           No
             ___  Transit Options                   No
             ___  Extract                           No
             ___  Transaction Analysis              No
             ___  DLI Call Analysis                 No
             ___  DB2 Call Analysis                 No
             ___  MQ Call Analysis                  No
      -  ___ Trace Reports                          No
             ___  DC Queue Manager Trace            No
             ___  Database Trace (Full Function)    No
             ___  DEDB Update Trace                 No
             ___  ESAF Trace                        No
         ___ User-Written Reports                   No
             ** End of Reports **
```

Figure 158. Edit Log Report Set

You can flip the status by selecting the **+** or **-** character with the mouse (or lightpen) or cursor select key. Selecting the category with the **S** line action also flips its status.

Tip: If your terminal emulation allows, it is recommended that you configure your Mouse Options to activate the lightpen function. This allows you to left button click on the **+** or **-** characters to Expand and Collapse the Report Categories. The use of your mouse as a lightpen may vary depending on your terminal emulation software.

Each report can be activated (sets the **Active** column value to `Yes`) or deactivated (`No`). If any changes are made to a report, the dialog will mark the report as active automatically. Each Report Category can be activated or deactivated. Only active reports in active report categories are included in the Report Set at submit time.

A Report Set can be submitted for processing only if there is at least one active report in an active report category. However, you can use the **RUN** line action to temporarily override the inactive status of a report or report category.

Line actions

The line actions that you can enter on the Log Report Set panel depend on the type of item that you enter the line action next to.

The available line actions depend on whether they are acting on either:
- The top of the Report Set menu tree (whole of Report Set)
- A Report or Option Category
- The Global or Transit Options
- A Report or Extract

`** Reports **`

The available line actions for `** Reports **` at the top of the menu tree are:

/ Display the menu of line actions.

S Expand all categories that are not already expanded, or collapse all categories if they are all expanded.

A Activate all categories that contain one or more active reports. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.

AA Activate all categories, all reports, all options.

D Deactivate all categories. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.

DD Deactivate all categories, all reports, all options.

RUN Also **R**. Run the report category. Run-time options will display.

Report Categories

The available line actions for a Report Category are:

/ Display the menu of line actions.

S Expand or Collapse the report category.

A Activate the report category (sets the **Active** column value to `Yes`). Alternatively, you can type `Y` in the **Active** column. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.

AA Activate the report category and all the reports and options within it.

D Deactivate the report category (sets the **Active** column value to `No`). Alternatively, you can type `N` in the **Active** column. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.

DD Deactivate the report category and all the reports and options within it.

RUN Also **R**. Run the report category. Run-time options will display.

Options

There are three sets of Options: Log Global Options, Transaction (MSGQ) Transit Options and Fast Path Transit options. The Options can be edited by selecting with line action **S**. They cannot be explicitly activated or deactivated.

Reports

The available line actions for a report are:

/ Display the menu of line actions.

S Select (Edit) the report.

A Activate the report (Active=Yes). Alternatively, you can type `Y` in the **Active** column.

D Deactivate the report (Active=No). Alternatively, you can type `N` in the **Active** column.

RUN Also **R**. Run the report. Run-time options will display.

Not available on the submenu of 21 User-Written Record Processors.

RUN command

The RUN command runs the Report Set and prompts you for entry of runtime options, such as System Selection and Report Interval, before generating the JCL.

SUB, JCL, and JCM are special RUN requests that preset the Execution Mode (see "Run Log Report Set" on page 291) and allow you to bypass the runtime prompt:

- The SUBMIT or SUB command directly submits the Report Set for execution.
- The JCL command builds the JCL to execute the Report Set and allows you to edit the job before you submit it or save it in your JCL library.
- The JCLCMD or JCM command builds the JCL, converts the Report Set to a command stream, and allows you to edit the job before you submit it or save it in your JCL library.

The RUN command does not reset the Execution Mode. For example, if you SUB a Report Set, the Execution Mode is set to 1. If next time you RUN a Report Set, the Execution Mode will default to 1.

RUN is also available as a line action to run individual reports or report categories and override the Active status. When entered as a line action, only Execution Mode

3 is available. **SUB**, **JCL**, and **JCM** can be entered as a line action, however in this case they act the same as the **RUN** line action.

Specifying Report Options

The IMS PA dialog stores the report options that you specify in the Report Sets data set.

For additional information about the report options and examples of the reports, see the chapter "Analyzing Log reports and extracts" in the *IMS Performance Analyzer for z/OS: Report Reference.*

Saving your changes

If an active report is deactivated, its specified options are retained. To return to the default options for a report, edit the report in the Report Set, then select **File** > **Reset To Defaults** from the action bar or enter DEFAULTS on the command line. To return to the default value for a single field (excluding flags, selection fields, or fields in a dependent set), just erase the value in the field.

Any changes to a Report Set's options and activated reports are saved *only* by issuing a SAVE, SAVEAS, or **Exit** (**F3**) command from the EDIT Report Set panel.

Note: Exit (**F3**) discards changes if **Automatic Save on Exit** in your IMS PA Profile Options is set to `NO`.

Saving of changes made on a subordinate panel (for example, a subpanel of the Management Exception Report) is as follows:

- If **Exit** (**F3**) from the subpanel, then changes are retained pending SAVE, SAVEAS, or **Exit** (**F3**) from the EDIT Report Set panel.
- If CANCEL from the subpanel, then changes just entered on the subpanel are discarded.

Run Log Report Set

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.

About this task

One way to do this is shown in "Log Report Sets" on page 287.

Before IMS PA generates the JCL, the Run Report Set panel is displayed to prompt you to specify runtime options. You can request to bypass this prompt, except in the following circumstances:

- When the RUN command is used. The prompt for runtime options can only be bypassed if SUB, JCL, or JCM commands are used.
- When a Report Interval is specified, for example, for DBRC Log Selection.

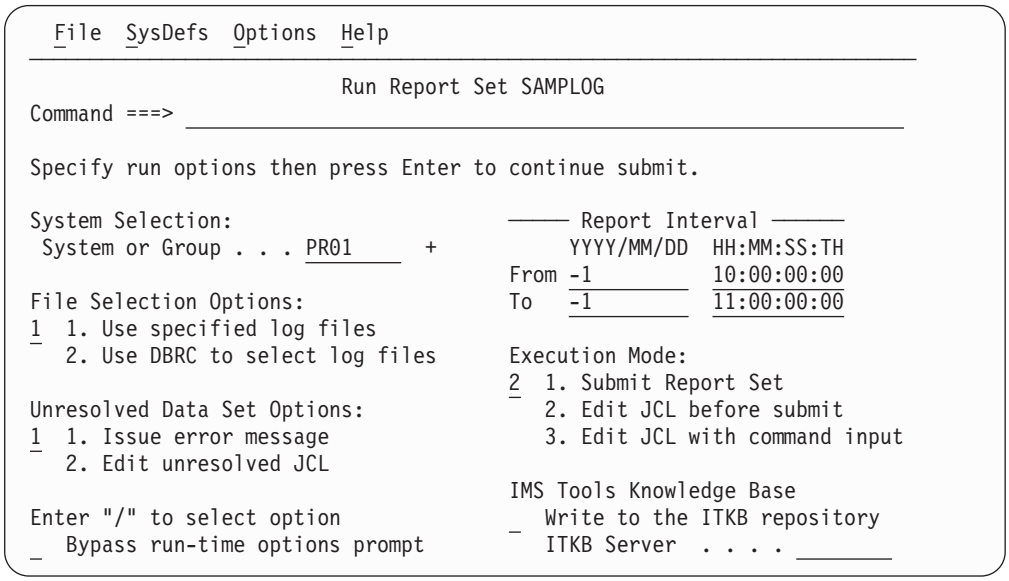


Figure 159. Run Log Report Set

Specify your desired runtime options. When the specification is complete, press Enter to proceed with JCL generation.

The options on the Run Report Set panel are:

System Selection

Specify the IMS Subsystem or Group to run the Report Set against. IMS PA includes in the JCL the log files specified for this subsystem or group.

You can type the system or group name or press **Prompt** (**F4**) to select one from a list of available systems and groups.

If you want to change your system definition or group specification, you can link there by selecting **SysDefs** in the action bar.

The generated JCL specifies the release of the IMS system on the `EXEC IPIMAIN,PARM='V`*`vrm`*`'` statement. However, if you specified a group with IMS systems at different release levels, they are listed under `//IPIOPTS DD *` as follows:

```
IMSPALOG SYSTEM(ims1,Vvrm)
IMSPALOG SYSTEM(ims2,Vvrm)
```

Report Interval

Default: Blank initially, but thereafter your specification is remembered.

Specify a date/time range. This date/time specification overrides at run time the Global Report Interval specified within the Report Set. Date is required for DBRC Log Selection, but otherwise the date/time fields may be left blank.

Date can be either an actual date specification with the same edit rules as the Global Report Interval (see "Log Global Options" on page 294), or it can be a relative date. Relative dates are specified as 0, -1, -2,... to signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. If both From and To dates are specified, they must be in the same format.

Time is optional. If From time is not specified, it defaults to the start of the day. If To time is not specified, it defaults to the end of the day.

The specified date/time range is included as parameter input in the generated JCL.

For Log File input, under `//IPIOPTS DD *`

```
IMSPALOG START(yyyy/mm/dd,hh:mm:ss:th),
         STOP(yyyy/mm/dd,hh:mm:ss:th)
```

For DBRC Log Selection, under `//IPIPARM DD *`

```
FROM=(yyyy/mm/dd,hh:mm:ss:th)
TO=(yyyy/mm/dd,hh:mm:ss:th)
```

Log Selection Options

Select **1** to instruct IMS PA to use the log files explicitly specified in your System Definitions.

Select **2** to instruct IMS PA to use DBRC Log Selection to identify the relevant log files. See Chapter 15, "Automated File Selection," on page 197 for further details of this process.

Unresolved Data Set Options

This option allows you to control what IMS PA does when it strikes a problem with JCL generation because the system or file definitions for your System Selection are incomplete. Select one of the following actions:

1. **Issue error message**. IMS PA aborts JCL generation and reports the errors in a window titled Report Set JCL Generation Failure. This allows you to link to System Definitions or Groups and correct your file specifications.
2. **Edit unresolved JCL**. IMS PA proceeds with JCL generation creating DD statements with `DSN=<unresolved>` where the files are not known. Regardless of your JCL or SUB request, the JCL is edited to allow you to specify the DSNs before submission.

You can use **SysDefs** in the action bar to link to System Definitions to make changes, or you can edit the JCL and make changes that apply to this run only.

Execution Mode

Default: According to the command entered.

Specify whether to execute the Report Set or generated commands, and whether you want to edit the JCL before submit. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling or ad hoc report requests.

The options are

1. Submit Report Set. This is equivalent to the SUBMIT or SUB command.

   The Report Set JCL contains the statements:

   ```
   //IPIRSET  DD DSN=ReportSets.DSN(ReportSetName),DISP=SHR
   //IPIOBJL  DD DSN=ObjectLists.DSN,DISP=SHR
   //IPIDIST  DD DSN=Distributions.DSN,DISP=SHR
   //IPIFORM  DD DSN=ReportForms.DSN,DISP=SHR
   ```

2. Edit JCL before submit. This is equivalent to the JCL command. It generates the same JCL as SUBMIT, but allows you to edit it.
3. Edit JCL with command input. This is equivalent to the JCLCMD or JCM command.

   This generates JCL in which the Report Set, and any Object Lists and Distributions it uses, are converted to a stream of commands and displayed to allow you to edit them. The Log JCL contains the statements:

```
//IPICMD  DD *
         IMSPALOG     ...,
                      INCL|EXCL(...),...
         IMSPALOG     EXECUTE
Distname DISTRIBUTION
```

Note that when you enter RUN at the report-level as a line action or override, option 3 is the only option available to you.

Bypass run-time options prompt
Default: Not selected.

This controls the display of the prompt for runtime options, the Run Report Set panel.

Enter / to bypass the runtime options prompt. This is useful when you have specified your System Selection and you want to run your Report Sets from hereon using the SUB, JCL, or JCM commands without having the prompt intervene each time. Note that the runtime prompt cannot be bypassed if you use the RUN command to run your Report Set or you have specified a Report Interval (for example, for DBRC Log Selection).

IMS Tools Knowledge Base
Default: Not selected.

To redirect output to the IMS Tools Knowledge Base:

1. Set up the IMS Tools Knowledge Base for IMS Performance Analyzer reports.
2. Select **Write to the ITKB repository** and specify the ITKB server name.

Related concepts:

"Report command format" on page 41
IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

"IMS Tools KB setup for IMS Performance Analyzer reports" on page 772
IMS Performance Analyzer is registered as a product (PRODUCTID=IP). All fixed-format reports are registered. Also, generic report definitions are registered for ten LIST and ten SUMMARY form-based reports and five user-written log reports.

Related reference:

Chapter 21, "Log batch interface," on page 409
The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for Log report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

"Report Set JCL" on page 741
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Log Global Options

The IMS PA Log Global Options define general control information which applies to all active reports within the Report Set.

To view and edit Log Global Options for a Report Set:

1. Select the Log Report Set.
2. Expand the **Options** category using line action S.

3. Select the **Log Global** category using line action S.

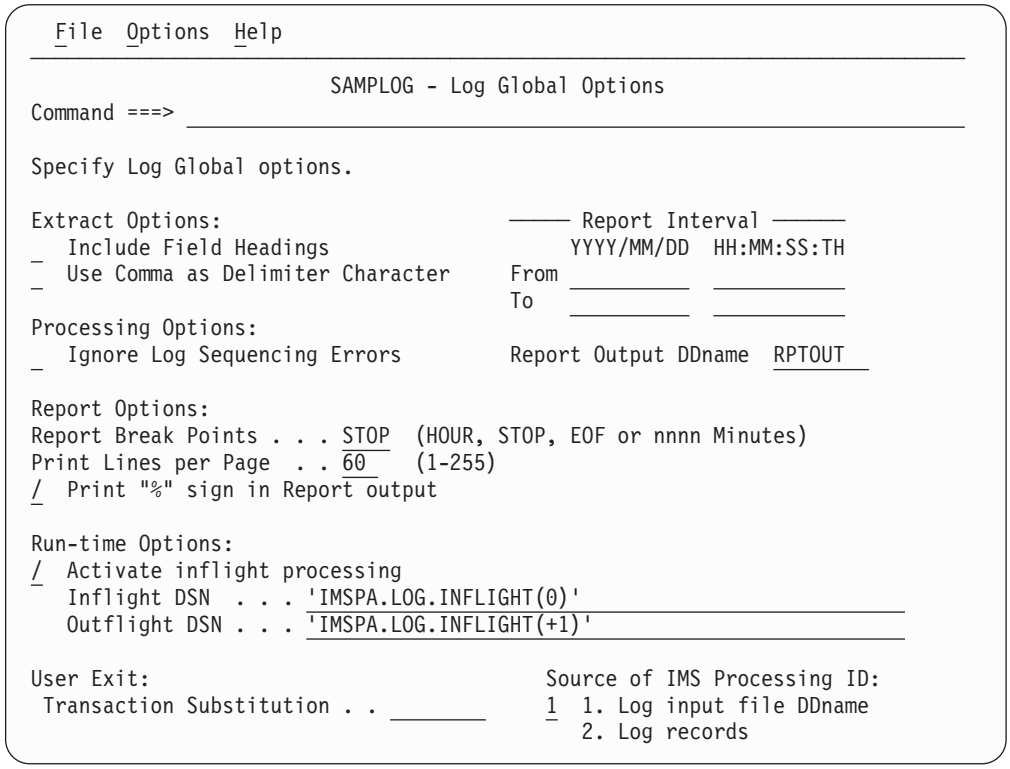


Figure 160. Log Global Options

The options are as follows:

Report Interval

Default: Not specified. All records are included.

This allows you to specify a time period for selecting a subset of the input file data for passing to the report processors. Records with time stamps on or after the From Date/Time and before the To Date/Time are selected for processing. Reducing the time period can significantly reduce processing time and virtual storage requirements for generating the reports.

A Report Interval can be specified for some individual reports, and is applied within the context of the Global Report Interval.

You can specify one of the following:

Date/time pairs or dates only

This indicates a *date-time range* (for example, 2018/06/25 8:00 to 2018/06/25 17:00). Input records between the From Date/Time and To Date/Time are selected for report processing. Any records at the start or end of the input file that are outside the specified range are bypassed. The From Date/Time must be before the To Date/Time.

Times only

This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Input records whose time stamp is within the specified time slot, irrespective of the date, are selected for report processing. Any records throughout the input file whose time of day is not within the specified time slot are bypassed. The From and To Times must

be different. Specifying the From Time greater than the To Time indicates a time slot across midnight.

Neither date/time pair
All input records are selected.

Rules governing the date:
- A date is expected in a format consistent with your **Preferred Date Format** specified in your Profile Options. See Figure 12 on page 68.
- If the year of the date is specified as **** (four asterisks), the current year is substituted at the time the Report Set is executed.
- If the From Date is omitted, it will default at run time to the start of the input file.
- If the To Date is omitted, it will default at run time to the end of the input file.

Rules governing the time:
- Time is expressed as *hh*:*mm*:*ss*:*th* for hours, minutes, seconds, tenths and hundredths of a second. Colon delimiters separate the parts of the time.
- If the **From** Time is omitted, it will default at run time to `00:00:00:00`.
- If the **To** Time is omitted, it will default at run time to `23:59:59:99`.

Note: If producing Transit reports for shared queues log input data, the efficiency of the batch report processing can be significantly improved by specifying a global Report Interval which defines the intersecting time period for the multiple IMS subsystems. See "Specifying the Time Period for Transit Reports" on page 299 for further details.

Report Output DDname
Default: `RPTOUT`

Specify the DDname to be used for the output of the following Transaction Transit reports:
- Analysis
- Statistics
- Graphic Summary
- Extract by Interval

Include Field Headings
Default: Not selected.

Select with a / to include field headings as the first record in the extract file. If not selected, the field headings are omitted.

This option applies to the Total and Exception Traffic Extract Data Sets optionally produced by the Transaction (MSGQ) Exception and Fast Path (EMH) Transaction Exception reports.

Use Comma as Delimiter Character
Default: Not selected.

Select with a / to use a comma as the delimiter between fields in extract file records. If not selected, a space is used. If any extract data fields are null or have embedded spaces, the space delimiter may confuse subsequent processing by external programs or PC tools.

This option applies to the Total and Exception Traffic Extract Data Sets optionally produced by the Transaction (MSGQ) Exception and Fast Path (EMH) Transaction Exception reports.

Ignore Log Sequencing Errors
Default: Not selected; do not ignore.

Select with a / if you want IMS PA to ignore log sequencing errors which might occur, for example, if running from a subset of the records from the original log files.

Usually, if log sequence errors are encountered, IMS PA forces end of data processing and initiates reporting. Instead, if this option is selected, information messages are produced, processing continues, and reporting occurs at log end of file.

Report Break Points
Default: STOP

Specify when reports are to be written, as follows:

HOUR Write reports every hour.
STOP Write reports at the end of the specified interval, or end of the job if no defined interval.
EOF Write reports at the end of the job.
nnnn Write reports every *nnnn* minutes. The maximum value is 9999.

All times refer to log times.

Print Lines per Page
Default: 60

Specify the number of print lines per page. The specified value applies to all log reports except the Transaction Transit Graphic Summary and Extract by Interval.

Valid values are from 1 to 255.

This option generates the PAGESIZE(*nnn*) global operand.

Print "%" sign in Report output
Print the percent sign % in percentage values in report output. This is the default, and applies only to some form-based reporting output.

If not selected, this option generates the NOPCTSIGN global operand.

Activate inflight processing
Default: Selected.

Select with a / if you want IMS PA to perform inflight transaction processing.

IMS produces its logs (SLDS data sets) at regular intervals as the online log data dataset (OLDS). As such, some transactions may still be in progress at the end of the log. These incomplete transactions are called inflight transactions.

When **Activate inflight processing** is selected, IMS Performance Analyzer does not report incomplete transactions. Instead it writes their details so far to a work dataset. This data set is then input into the next IMS Performance Analyzer job as a list of transactions pending completion.

There are two data set options when using inflight processing. Both options ensure you will never have to change your report JCL:

- **Fixed data set names:** IMS Performance Analyzer writes to the data set specified in **Outflight DSN**. The **Inflight DSN** and **Outflight DSN** data sets are then switched in an IDCAMS post step after reporting has completed successfully (RC=0). For an example, see "Log Global Options" on page 425.
- **Generation Data Set Group (GDG):** Use the following IDCAMS command to define the GDG base:

```
DEFINE GDG (NAME('IMSPA.LOG.INFLIGHT') NOEMPTY SCRATCH LIMIT(3))
```

The GDG limit is set to 3, even though only 2 data sets are required. This will ensure that in the event of a reporting failure, corrective action can be taken (delete the generation 0 data set and re-run the job).

See "Allocate IMS inflight data sets" on page 742 for samples.

Inflight processing affects the following reports:

- "Transaction Transit reports (Form-based)" on page 318
- "IMS Transaction Index" on page 329
- "Internal Resource Usage reports" on page 340

Notes:

- Use inflight processing to run IMS Performance Analyzer against every newly created SLDS data set.
- A transaction is considered to be complete if, at log end-of-file, its completion level is greater than or equal to 5, i.e. the transaction has completed processing and the type 56FA or 07 log record is available to provide its accounting details.
- It is recommended that you activate TRANSTAT=YES to collect type x'56FA' transaction accounting statistics record. This ensures that CPU usage and DLI call activity per transaction is accurate. Without 56FA these statistics are estimated – apportioned from the 07 schedule termination record. In WFI and pseudo-WFI environments where many transactions are processed per schedule, the reported statistics for a problem transaction may be misleading.
- It is recommended when using inflight to build the IMS Transaction Index as you go. The IMS Transaction Index will keep a detailed record of every transaction processed, providing input for further reporting or problem investigation using IBM IMS Problem Investigator for z/OS.
- Do not change the BMPSYNC option while inflight processing is active. If IMS Performance Analyzer detects a mismatch in the BMPSYNC option the job is terminated and message "IPI0358E" on page 699 is issued.
- For Internal Resource Usage reports, type x'45' IMS statistics log records are also cut to the out-flight data set, and then used as the initial interval for the next run.

User Exit

Default: Not specified.

Optionally, specify the name of a Transaction Substitution Exit. The Exit enables you to change the Transaction Code name that is reported by selected Transit reports. The affected reports are the Transit Analysis, Statistics and Transaction Exception reports.

Sample JCL that illustrates how to use the Transaction Substitution Exit facility is provided in the following members in the SIPISAMP library:

IPITSUB#
: Transaction Substitution Exit documentation: how it works, how to install it, how to use it

IPITSUBA
: Assembly and Link-Edit JCL

IPITSUBR
Run Transit Reports

IPITSUBS
JCL to install the USERMOD

IPITSUBU
USERMOD to install the Exit

IPITSUBX
Sample Exit

Source of IMS Processing ID
Default: 1.

Controls how IMS PA sources the IMS Processing ID reported in the Transaction Transit Reports (fixed format and form-based).

1 Select 1 to use the subsystem name taken from the log input ddname in the format L*xxxxunn* where *xxxx* is the IMSID, for example `//LIMSA001 DD DSN=IMSA.SLDS`.

2

Select 2 to derive the subsystem name from the IMS log records. Field TPCPOSSN in any type 56 record associated with the transaction is typically used.

This option generates the `SETIMSID(LOG)` batch operand.

Related reference:

"Log Global Options" on page 425
The Log Global Options define output and general control information for the log reports.

"Allocate IMS inflight data sets" on page 742
The sample library SIPISAMP contains a member with sample JCL to create IMS inflight data sets.

Specifying the Time Period for Transit Reports

When IMS PA merges shared queue log input from multiple IMS subsystems, the Transaction Transit record processors build in-storage queues of individual transaction details. In a shared queue environment, these details may be obtained from the logs of several IMS subsystems. IMS PA cannot complete individual transaction processing until all log records pertaining to the transaction are read.

Missing log data can cause IMS PA to accumulate these transaction queues without them being flushed when the transactions complete. When these queues become too large, IMS PA recognizes that log input may be missing and flushes the oldest transactions automatically without reporting on them.

Specifying a global Report Interval can significantly reduce the CPU and virtual storage requirements of shared queue log input Transaction Transit processing. By specifying a time period within the intersection of the log input from all the IMS subsystems in the sysplex, IMS PA will only accumulate transaction information that is complete and accounted for in reporting.

Example

Consider the following three IMS subsystems with log input for January 4, 2018:
IMSA, from 10:25 to 17:50

IMSB, from 10:06 to 16:20
IMSC, from 11:08 to 16:20

For reporting aligned to a ten minute interval, the intersecting time period is January 4, 2018 from 11:10 to 16:20. This is specified using the **Report Interval** on the Log Global Options panel (see "Log Global Options" on page 294).

```
                          SAMPLOG - Log Global Options
Command ===> ____________________________________________________________

Specify Log Global options.

Extract Options:                          ------ Report Interval ------
_  Include Field Headings                      YYYY/MM/DD  HH:MM:SS:TH
_  Use Comma as Delimiter Character     From 2018/01/04  11:10:00:00
                                        To   2018/01/04  16:20:00:00
:
```

Figure 161. Global Report Interval specification

When you run the Report Set, the Run Report Set panel can optionally be displayed to allow you to update the Report Interval and other options. The Report Interval specified at run time overrides that specified on the Global Options panel. See "Run Log Report Set" on page 291 for further details of this facility.

The IMS PA Report Set batch run log (in SYSPRINT) details the individual IMS subsystem log input start and end times, as well as the IMS PA reporting period:

```
03Feb2018 14.31.35              IMS Performance Analyzer 4.4.0                    Page 2

04Jan2018 10:25:37:62  IPI0300I  System IMSA Log Started, DDname=LIMSA001
04Jan2018 10:06:42:96  IPI0300I  System IMSB Log Started, DDname=LIMSB001
04Jan2018 11:08:43:49  IPI0300I  System IMSC Log Started, DDname=LIMSC001
04Jan2018 11.10.15.92  IPI0002I  Reporting starts within specified time range
04Jan2018 16:10:16:69  IPI0310I  Transit processing started
04Jan2018 16:17:27:27  IPI0303I  System IMSC Log Ended, DDname=LIMSC001
04Jan2018 16:19:25:17  IPI0303I  System IMSB Log Ended, DDname=LIMSB001
04Jan2018 16:20:00:26  IPI0303I  System IMSA Log Ended, DDname=LIMSA001
04Jan2018 16.19.59.80  IPI0003I  Reporting stopped: Elapsed time is 5.09.43.870.912
04Jan2018 16.19.59.80  IPI0004I  End of File signalled to Report Processors
04Jan2018 16:19:24:69  IPI0311I  Transit processing ended, Transaction Sets processed=127234
```

Figure 162. SYSPRINT Run Log from Shared Queue report processing

Transaction Transit reports

The options for Transaction Transit reports are described here.

The IMS PA Transaction Transit standard reports (not Form-based) are:
- Analysis
- Statistics
- Log
- Graphic Summary
- Extract by Interval
- Transaction Exception
- Transaction History File

Transaction Transit Options

The IMS PA Transaction Transit Options define control information that applies to the Transaction Transit reports within the Report Set.

The Transaction Transit Options apply to the following reports:

- Transaction Transit Analysis
- Transaction Transit Statistics
- Transaction Transit Log
- Transaction Transit Graphic Summary
- Transaction Transit Extract by Interval
- Transaction Exception
- Transaction History File

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                     SAMPLOG - Transaction Transit Options
Command ===> ____________________________________________________________

Specify Transit options.

Processing Options:
 Peak Transaction Time Percentage    90      (50-100%)

Report Options:
/  Include MSC Transactions
_  Include BMP Transactions
_  Include APPC/OTMA Transactions
_  Include Message Switches
_  Report All Transactions
_

Processing Limits:
 Input Queue Time (INMAX) . . . . . 60     Seconds
 Output Queue Time (OUTMAX) . . . . 60     Seconds
 Transaction Set Size . . . . . . . 32767  (1-32767)

Interval Options:
 Time Interval  . . . . . . . . . . 15    Minutes
 Align Time Interval to Even Hour   YES   (Yes or No)

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       INC    TL000001   /

Note: INMAX/OUTMAX is ignored if BMPs or Message Switches are included.
```

Figure 163. Transaction Transit Options

The options are as follows:

Processing Options

Peak Transaction Time Percentage

Default: 90

Specify a percentile *nnn* between 50 and 100 to report the transit time within which *nnn*% of the transactions complete. Computations assume a normal distribution. Thus, 50 gives the median transit time for the sample.

Specify 90 or greater to determine the response time for most transactions. This is useful, for example, when monitoring a service level agreement which states that 95% of transactions must complete within nn milliseconds.

This percentile calculation is applicable to the following Transaction Transit reports:
- Analysis
- Graphic Summary
- Transaction Exception

It does not apply to the Extract by Interval during Report Set processing. However, a percentile calculation can be applied to extracted data at a later stage of IMS PA processing via the Graphing and Export facility.

Report Options

Include MSC Transactions
Default: Not selected; do not include MSC transactions.

Select with a / to include MSC transactions that originated on another system.

Include BMP Transactions
Default: Not selected; do not include BMP transactions.

Select with a / to include BMP transactions.

Include APPC/OTMA Transactions
Default: Not selected; do not include APPC and OTMA transactions.

Select with a / to include APPC and OTMA transactions.

APPC/IMS has three types of application programs:
- Standard
- Modified
- CPI Communications (CPI-C) driven

OTMA transactions use the APPC message prefix.

Include Message Switches
Default: Not selected; do not include message switches.

Select with a / to include message switches.

Message switches include MSC transactions that originated in the specified system and have been sent to another system for processing.

Report All Transactions
Include all transactions, regardless of whether there was a response to the originating LTERM.

This option will automatically include all MSC, BMP, and APPC and OTMA transactions unless one of **Include MSC Transactions**, **Include BMP Transactions**, or **Include APPC/OTMA Transactions** has been selected. In this scenario, the remaining un-selected options are not included, even if **Report All Transactions** has been selected.

Selecting **Report All Transactions** alone will not report Message Switches. To include Message Switches, select the **Include Message Switches** option.

Processing Limits

Input Queue Time (INMAX)
Defaults: 60

Specify the number of seconds a message can remain in the input queue before being discarded by the Transaction Transit reports. When such a message is discarded, all other measurements for that transaction are also discarded. This eliminates the abnormally long times caused by conditions like hardware failures.

Valid values are from 0 to 99999 seconds. Zero (0) has special meaning:

0 No messages will be discarded and all will be reported.

Note: INMAX is ignored if BMP Transactions or Message Switches are included.

Output Queue Time (OUTMAX)
Defaults: 60

Specify the number of seconds a message can remain in the output queue before being discarded by the Transaction Transit reports. When such a message is discarded, all other measurements for that transaction are also discarded. This eliminates the abnormally long times caused by conditions like hardware failures.

Valid values are from 0 to 99999 seconds, some with special meaning:

0 No messages will be discarded and all will be reported.

88888 For all transactions, report output queue time as zero.

77777 For all transactions, except MSC transactions, report output queue time as zero.

Note: OUTMAX is ignored if BMP Transactions or Message Switches are included.

Transaction Set Size
Default: 32767

Specify the maximum number of transactions in a transaction set to be processed by the IMS PA transaction transit time functions. The purpose of this limit is to ensure that IMS PA doesn't run out of storage and abend.

Valid values are from 1 to 32767. In cases where large transaction sets exist on a log data set, setting the Transaction Set Size to a minimum value decreases the likelihood of an 80A abend.

If an 80A abend occurs, a diagnostic message is printed just before the end-of-file record counts. The message states the size of the largest transaction set and the storage that it required. If the required storage was a significant amount, specify a value for **Transaction Set Size** to restrict the transaction set size; or if it has already been specified, lower its value. Then rerun the job.

Interval Options

Time Interval

Default: 15

Specify the value *nnnn*, in minutes, of the reporting interval for transit time by time of day reports, graphs, and extracts. Data is accumulated every *nnnn* minutes from the start of the log input for the following Transaction Transit reports:

- Analysis (by Time of Input)
- Statistics (by Time of Input)
- Graphic Summary
- Extract by Interval
- Transaction Exception (by Time of Input)

The data included in the first reported interval is that from the first record whose time stamp is on or after the specified Start/From date/time. However, the specified Stop/To date/time may fall within the last reported interval, and in order to complete the interval, data whose time stamp is after the Stop/To date/time may therefore be included.

Note: If **Align Time Interval to Even Hour** is selected, it is recommended that you specify a value that is a factor or a multiple of 60 to achieve consistent alignment to the hour.

Align Time Interval to Even Hour

Default: YES

Applies to the following Transaction Transit reports:

- Analysis (by Time of Input)
- Statistics (by Time of Input)
- Graphic Summary
- Extract by Interval
- Transaction Exception (by Time of Input)

Specify YES to align the reporting interval to the hour. Data is accumulated according to the specified **Time Interval** starting from the hour of the first log input record, but with printing commencing from the first time interval containing data.

For example, if the time of the first record is 10:37:05, the accumulation starts at 10:00:00. If the specified time interval is 30 minutes, the reported start times of the intervals are then 10.30.00, 11.00.00, 11.30.00, 12.00.00, and so on; whereas for a time interval of 25 minutes, the reported times are 10.25.00, 10.50.00, 11.15.00, 11.40.00, 12.05.00, and so on. In both cases, 10.00.00 does not appear in the report as the interval contains no data.

Note: To achieve alignment on every hour, specify a time interval which is exactly divisible into an hour. This is recommended if merging of input logs is required, to ensure that time intervals are aligned and the validity of results is retained.

Specify NO for no time interval alignment. For example, if the time of the first record is 10:37:05, and the specified time interval is 30 minutes, the reported start times of the intervals are then 10.37.05, 11.07.05, 11.37.05, and so on; and for a time interval of 25 minutes, the reported times are 10.37.05, 11.02.05, 11.27.05, and so on.

Selection Criteria

Default: None specified. Include all records without filtering.

Specify transaction codes to be included in or excluded from all Transaction Transit reports in the Report Set. Within this primary filtering of transaction codes, a further filtering is available on the following Transaction Transit reports:

- Analysis
- Statistics
- Log
- Extract by Interval
- Transaction Exception

This enables you to include in your report only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

For example, to include only transaction codes listed in Object List TL000001 specify:

```
Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       INC    TL000001   /
```

To exclude transaction code PAY specify:

```
Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       EXC    PAY        _
```

Related reference:

"Transaction (MSGQ) Transit Options" on page 426
Transaction Transit Options define general control information for the Transaction Transit reports.

Transaction Transit Analysis report

The Transaction Transit Analysis report can show response time performance by logical terminal, transaction code, transaction code within logical terminal, message class, line or VTAM node, and time of input.

IMS PA generates the report command:

```
IMSPALOG ANALYSIS(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                   SAMPLOG - Transaction Transit Analysis
Command ===> _________________________________________________________________

Specify report options.

Reports Required:                       ───── Report Interval ──────
/  Transaction Code                          YYYY/MM/DD  HH:MM:SS:TH
_  LTERM                                From __________  ___________
_  LTERM-TRANCODE                       To   __________  ___________
_  Line or VTAM Node
_  Class                                Transaction Source:
_  Time (Interval: 15 Minutes)          1  1. LTERM
                                           2. User ID
Report Options:
_  Report All Transactions

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 LTERM                  ___    ________   _
 Line                   ___    ________   _
 VTAM Node              ___    ________   _
 Class                  ___    ________   _
 User ID                ___    ________   _
```

Figure 164. Transaction Transit Analysis Report Options

These reports are written to the data set defined by the log global option **Report Output DDname**.

The options are:

Reports Required

Report options:
- Transaction Code
- LTERM or User ID
- LTERM-TRANCODE or User ID-TRANCODE
- Line or VTAM Node
- Class
- Time (Interval is *nnn* minutes)

Default: Transaction Code (single report ordered by Transaction Code)

Select with a / to produce any combination of six reports ordered by Transaction Code, LTERM, Transaction Code within LTERM, Line or VTAM Node, Message Class, or Time. This is the default choice of reports when Transaction Source is set to LTERM. Transaction transit (response) times will be summarized by LTERM.

If Transaction Source is set to User ID, the six available reports are ordered by Transaction Code, User ID, Transaction Code within User ID, Line or VTAM Node, Message Class, or Time. Transaction transit (response) times will be summarized by User ID.

For reporting by Time, the interval of reporting is specified in minutes by the**Time Interval** option, and interval alignment is specified by the **Align Time Interval to Even Hour** option on the Transaction (MSGQ) Transit Options panel.

Report Interval

Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and before the **To** Date/Time are included in the report.

You can specify one of:

Date/time pairs or dates only
This indicates a *date-time range* (for example, 2018/06/25 7:00 to 2018/06/25 16:30). The From Date/Time must be before the To Date/Time.

Times only
This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.

Neither date/time pair
All input records are selected.

Rules governing the date and time are the same as those for the Global Report Interval (see "Log Global Options" on page 294).

Transaction Source
Transaction Source specifies what the report uses to identify the originating source of a transaction.

1. Specify **LTERM** to see transaction transit (response) times summarized by LTERM. This is the default.
2. Specify **User ID** to see transaction transit (response) times summarized by User ID.

Report All Transactions
Default: Not selected; the reports show only transactions that are directly involved in end-to-end response.

Select with a / to report all transactions. By default, the Transit Analysis and Statistics reports only report transactions that are directly involved in end-to-end response. IMS PA tracks the flow of each transaction, across its program switches to the point where it responds back to the originating LTERM. Only then is the transaction considered for reporting.

If this option is selected the requested report will include all transactions regardless of whether there was a response to the originating LTERM. This aligns the report results more closely with the Transaction Exception and Management Exception reports.

Selection Criteria
Default: None specified. However, Transaction Code Selection Criteria specified on the Transaction (MSGQ) Transit Options panel is applied at run time.

Selection Criteria enable you to include in your report only the information that you are interested in. Records can be included in or excluded from the report based on their Transaction Code, LTERM, Line or VTAM Node, Message Class, and User ID values. For Transaction Codes, this panel provides a secondary filter within the primary filter specified on the Transaction (MSGQ) Transit Options panel.

The reports are filtered only by the selection criteria that apply to that report. For example:
- Transaction Code report uses the Transaction Code filter
- Message class report uses the Class filter

- User ID report uses the User ID filter
- User ID-TRANCODE report uses the User ID and Transaction Code filters

You can specify a single value, a masking pattern, or an Object List that specifies many values. Masking is not supported for Line or Message Class objects. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"ANALYSIS: Transaction Transit Analysis report" on page 428
The ANALYSIS operand of the IMSPALOG batch command requests the Transaction Transit Analysis report.

Transaction Transit Statistics report

The Transaction Transit Statistics report is a graphical representation of the information in the Transaction Transit Analysis report.

IMS PA generates the report command:

```
IMSPALOG STATS(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                  SAMPLOG - Transaction Transit Statistics
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                        ──── Report Interval ─────
/  Transaction Code                           YYYY/MM/DD  HH:MM:SS:TH
_  LTERM                                 From __________  ___________
_  LTERM-TRANCODE                        To   __________  ___________
_  Line or VTAM Node
_  Class                                 Transaction Source:
_  Time (Interval: 15 Minutes)           1  1. LTERM
_                                           2. User ID

Report Options:
_  Report All Transactions
                                  Validation Warning
Graph Distribution   ________  +

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 LTERM                  ___    ________   _
 Line                   ___    ________   _
 VTAM Node              ___    ________   _
 Class                  ___    ________   _
 User ID                ___    ________   _
```

Figure 165. Transaction Transit Statistics Report

These reports are written to the data set defined by the log global option **Report Output DDname**.

The options are the same as those for the Analysis Report (see "Transaction Transit Analysis report" on page 305) with the following additional option:

Graph Distribution

Default: If no Distribution is specified, the following defaults are applied at run time:

Ranges (Limits) = 2,4,6,8,10,15,20,30,60
Title = Sc Mil (for seconds and milliseconds)
Multiplier = 1
Edit Mask = ZZZ,ZZZ.ZZ9

Specify the name of a Distribution to define the attributes of the graph. The sample Distribution LOGIN is provided. It defines:

Ranges (Limits) = 25,50,75,100,150,200,300,500,1000
Title = Sc Mil (for seconds and milliseconds)
Multiplier = 1
Edit Mask = ZZZ,ZZ9.999

See Chapter 11, "Distributions," on page 157 for information on how to define a Distribution.

Related reference:

"STATS: Transaction Transit Statistics report" on page 429
The STATS operand of the IMSPALOG batch command requests the Transaction Transit Statistics report.

Transaction Transit Log report

The Transaction Transit Log report shows the transit activity of each message originating from a logical terminal.

IMS PA generates the report command:

```
IMSPALOG LOG(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                    SAMPLOG - Transaction Transit Log
Command ===> ____________________________________________________________

Specify report options.

Queue Limits (INMAX/OUTMAX)              ────── Report Interval ──────
1  1. Only Messages Within Limits             YYYY/MM/DD  HH:MM:SS:TH
   2. Only Messages Exceeding Limits     From __________  ___________
   3. All Messages                       To   __________  ___________

                                         Report Output DDname  LOGDD

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 LTERM                  ___    ________   _
 User ID                ___    ________   _


Note: INMAX/OUTMAX refer to the Input and Output Queue Time values set in
      Transit Options, which are 0 and 0 seconds respectively.
```

Figure 166. Transaction Transit Log Report Options

The options are as follows:

Queue Limits
Default: **1. Only Messages Within Limits**

Select **1** to include those messages with times less than the values specified by the Transaction (MSGQ) Transit Options **INMAX**, **OUTMAX**. See "Transaction Transit Options" on page 301.

Select **2** to include those messages with times greater than the values specified by the Transaction (MSGQ) Transit Options **INMAX**, **OUTMAX**.

Select **3** to include all messages.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `LOGDD`

Specify the DDname to be used for the report output.

Selection Criteria
Default: **Transaction Code Selection Criteria** on the Transaction (MSGQ) Transit Options panel, applied at run time.

Records can be included in or excluded from the report based on their Transaction Code, LTERM, and User ID. This panel provides a secondary filter within the primary filter specified on the Transaction (MSGQ) Transit Options panel. This allows you to focus on the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"LOG: Transaction Transit Log report" on page 431
The LOG operand of the IMSPALOG batch command requests the Transaction Transit Log report.

Transaction Transit Graphic Summary report

There are no individual options for this report. The report can only be activated or deactivated.

The output is written to the data set defined by **Report Output DDname** on the Log Global Options panel.

The time values on the vertical axis of the graphs are defined by **Time Interval** and **Align Time Interval to Even Hour** on the Transaction (MSGQ) Transit Options panel. The layout of the graphs is not controlled by a Distribution.

Related reference:

"GRAPH: Transaction Transit Graphic Summary report" on page 432
The GRAPH operand of the IMSPALOG batch command requests the Transaction Transit Graphic Summary report.

Transaction Transit Extract by Interval

The Transaction Transit Extract by Interval creates extracts by time interval of transaction transit time data.

IMS PA generates the report command:

```
IMSPALOG EXTRACT(...)
```

This panel provides a second level of control for extract processing. Values specified on the Log Global Options and Transaction (MSGQ) Transit Options panels provide a primary level of control.

Note: If merging extracted data files, check that the specified values for the filters (such as Transaction Code Selection Criteria, MSC, BMP, and APPC/OTMA Transactions, and Message Switches) and the interval options (Time Interval, Align Time Interval to Even Hour) are consistent for all the extracts to ensure that the results of the merge are meaningful.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
              SAMPLOG - Transaction Transit Extract by Interval
Command ===> _________________________________________________________________

Specify extract options.

Extract Data Required:                  ───── Report Interval ──────
/  By Transaction Within Interval            YYYY/MM/DD  HH:MM:SS:TH
/  By Interval                          From __________  ___________
                                        To   __________  ___________

Extract Data Sets:
 Input  ______________________________________________
 Output ______________________________________________

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _


Note: The extract time interval, set in Transit Options, is 15 minutes
      and is aligned to even hours.
```

Figure 167. Transaction Transit Extract by Interval Options

The report summarizing the extract processing is written to the data set defined by **Report Output DDname** on the Log Global Options panel.

The options are as follows:

Extract Data Required

Options:
- **By Transaction Within Interval**
- **By Interval**

Default: Both selected.

Select with a / to produce the required extract.

Ensure that you select as a minimum criteria, the data you may wish to graph or export. For example:
- *To graph or export by interval*, you must first *extract by interval.*
- *To graph or export by transaction*, you must first *extract by transaction within interval.*

For more information, see Chapter 3, “Processing extract data sets,” on page 45.

Select **By Transaction Within Interval** to accumulate data for individual transaction codes within each time interval.

For example, if during a particular time interval there are, on the input log file, 3 records for transaction A, 2 records for transaction B, and no records for transaction C, the extract processing writes 2 records to the extract file, 1 with the aggregate data for transaction A, and 1 with the aggregate data for transaction B.

Select **By Interval** to accumulate data for all transactions in each time interval.

For example, in the previous scenario, for the particular interval only 1 record is written to the extract file with the aggregate data for both transactions A and B.

Select both to obtain by time interval, the aggregate data for the individual transaction codes and their totals.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Extract Data Sets: Input and Output
Defaults: None.

Extract processing uses the input data set, if it is specified, for reading previously extracted data, merging it with the data extracted from the current log, and writing it to the output data set. The extracted data is stored in a format suitable for further IMS PA processing, and is not directly readable by external programs.

The input data set is optional, but if specified, it must exist.

The output data set must be specified. If it does not exist, IMS PA will create the data set at the time the extract is run using the allocation details specified for the **Transit Extract by Interval Data Set** in **Reporting Allocation Settings** from the action bar **Options** menu. If the output data set exists, the JCL is built with `DISP=MOD` and the new extract data is appended to the end. To overwrite the contents, edit the JCL and specify `DISP=OLD`.

The same data set may be specified for input and output, although this is not recommended. You may specify the input and output data sets as generations (0) and (+1) respectively of the same generation data group (GDG) and thereby avoid the need to update the specification between runs.

Selection Criteria
Default: **Transaction Code Selection Criteria** on the Transaction (MSGQ) Transit Options panel, applied at run time.

Records can be included in or excluded from the extract based on their Transaction Code. This panel provides a secondary filter within the primary filter specified on the Transaction (MSGQ) Transit Options panel. This enables you to include in your report only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Ensure that your selection contains the transaction codes you may wish to export or graph. See Chapter 3, “Processing extract data sets,” on page 45.

Related reference:

“EXTRACT: Transaction Transit Extract by Interval” on page 432
The EXTRACT operand of the IMSPALOG batch command requests the Transaction Transit Extract by Interval.

Transaction Exception report and extract

The Transaction Exception report shows transaction performance information that affects response time.

IMS PA generates the report command:

```
IMSPALOG TRANEXC(...)
```

```
  File  Options  Help
_______________________________________________________________________________

                        SAMPLOG - Transaction Exception
Command ===> _____________________________________________________________

Specify report options.

Reports Required:                          ------ Report Interval ------
/  Transaction Code                             YYYY/MM/DD  HH:MM:SS:TH
_  User ID                                 From __________  ___________
_  Class                                   To   __________  ___________
_  Time (Interval: 15 Minutes)
_                                          Report Output DDname  TRANEXC

Report Options:
_  Transaction Totals Only
_  Shared Queue Details
_  Print Expectations
_  Extended format
_

Transaction Limits:            Validation Warning
 Expectation Set  ________  +

Extract Data Sets:
 Total Traffic      ____________________________________________
 Exception Traffic  ____________________________________________

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 Class                  ___    ________   _
```

Figure 168. Transaction Exception Report and Extract Options

The options are as follows:

Reports Required

Options:

- **Transaction Code**
- **User ID**
- **Class**
- **Time** (Interval is *nnn* minutes)

Default: Single report ordered by Transaction Code.

Select with a / to produce any combination of four Transaction Exception reports ordered by Transaction Code, User ID, Message Class, or Time of Input Message.

The Transaction Exception Recap report is always produced at the end to give a summary of the processing of the selected reports and requested extracts.

For reporting by Time, the interval of reporting is specified in minutes by the **Time Interval** option, and interval alignment is specified by the **Align Time Interval to Even Hour** option on the Transaction (MSGQ) Transit Options panel.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `TRANEXC`

Specify the DDname to be used for the report output.

Report Options
Select to include accumulated transaction totals or shared queue details.

Transaction Totals Only
Default: Not selected.

This option applies to the Transaction Exception reports by User ID, by Message Class, and by Time of Input Message which, by default, show a further breakdown of the data by Transaction Code.

Select with a / to show only the accumulated totals of transaction activity by User ID, Message Class, and Time.

Shared Queue Details
Default: Not selected.

This option is applicable when processing shared queue data.

Select with a / to include shared queue information in the report. If not selected, shared queue details will not be reported.

This option does not apply to the extract files which will include shared queue details whenever present in the log data.

Print Expectations
Default: Not selected; do not report expectation details.

Select with a / to include the values from the Expectation Set in the report in addition to the actual values. This will help you relate exceptions to expectations.

This option generates the `PRINTEXP` report operand.

Extended format
Default: Not selected.

The Transaction Exception report has two formats: original and extended. The default is the original format (`FORMAT1` report operand).

Select with a / to produce the extended format report (FORMAT2 report operand).

Transaction performance statistics are reported in three parts: *Total = *Exception + *OK.

- *Total: the overall performance of transactions in the sample (summary grouping)
- *Except: transactions that failed to meet the performance exception criteria as defined in the Expectation Set
- *OK: transactions with acceptable performance

The two report formats look similar but the report lines have different meanings:

FORMAT1

For the transaction code report, the three report lines (in order) are *Exception, then *OK, then *Total.

For user ID, class, and time breakdown, the single report line is *Exception only. Transactions with acceptable performance are omitted.

FORMAT2

The transaction code report, as well as the user ID, class, and time reports, all have the same three report lines: *Total, then *Exception, then *OK.

This is the recommended format because all reports have the same consistent format. Exception transactions are always reported on the *Except row and all reports give the complete breakdown of *Total = *Exception + *OK.

Transaction Limits: Expectation Set

Default: None.

Specify the name of an Expectation Set which contains user-supplied expected values for any of the following transaction attributes:

- Input queue time
- Processing time
- Output queue time
- Total transit time
- DB DL/I calls
- DC DL/I calls
- DB waits
- CPU time

"Specifying Expectations" on page 137 describes how to specify expected values in an Expectation Set.

The report will show a transaction as an exception if it is outside the range for any of the values defined in the Expectation Set. If the Expectation Set is not specified, then the report shows all transactions as exceptions.

To print the Expectation Set with the report, select the **Print Expectations** option.

Extract Data Sets

Extract options:

- **Total Traffic**
- **Exception Traffic**

Defaults: None.

Specify the names of either or both of the following optional extract data sets:

- The Total Traffic data set. All transactions have a detail record written to this data set.
- The Exception Traffic data set. Only exception transactions have an exception record written to this data set.

If the data set does not exist, IMS PA will create it at the time the report and extract are run using the allocation details specified in option 0.2 **Reporting Allocation Settings** from the IMS PA primary option menu.

If the data set exists, the new extract data will be appended to the end (`DISP=MOD`). To overwrite the contents of the extract data set, edit the JCL and specify `DISP=OLD`.

You may specify the extract data set as a generation of a Generation Data Group (GDG) and thereby avoid the need to update the specification between runs.

Selection Criteria

Default: None specified. However, the Transaction Code Selection Criteria specified on the Transaction (MSGQ) Transit Options panel is applied at run time.

Records can be included in or excluded from the report based on their Transaction Code, User ID, and Message Class values. For Transaction Codes, this panel provides a secondary filter within the primary filter specified on the Transaction (MSGQ) Transit Options panel. This enables you to include in your report only the information that you are interested in. You can specify a single value, a masking pattern (but not for Message Class objects), or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"TRANEXC: Transaction Exception report and extract" on page 434
The TRANEXC operand of the IMSPALOG batch command requests the Transaction Exception reports.

Transaction History File

The Transaction History File is used to collect historical performance data, useful for long-term trend analysis and capacity planning. Information is summarized for each transaction code over a short time interval, including transaction transit, response and CPU times, as well as DLI call statistics.

Data is provided in a format suitable for loading directly into DB2 databases, from where you can run queries or produce reports. For a description of the data, refer to "Understanding the Transaction History File" on page 759. Sample DB2 jobs are supplied in the SIPISAMP library to help you load the data into DB2 tables and run queries:

- Sample DDL job IPITHDDL to create the DB2 tables
- Sample Load job IPITHLOD to populate the DB2 tables with the history data
- Sample SQL query jobs IPITHQM1, IPITHQM2, IPITHQM3, IPITHQM4

IMS PA generates the report command:

```
IMSPALOG TRANHIST(...)
```

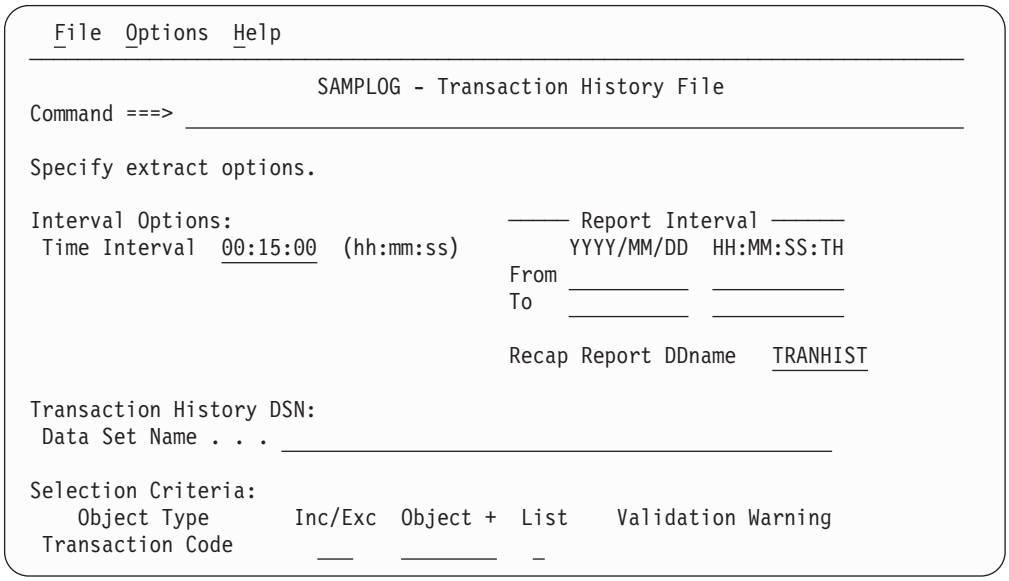


Figure 169. Transaction History File options

The options are:

Time Interval
Default: `00:15:00` (15 minutes)

Specify the time interval over which transaction activity is summarized. For each interval, IMS PA accumulates the data by transaction code and writes a history record for each.

Note that this is a required field, so always overrides the Transit Global Options time interval.

Specify a value in the range `00:00:01` (1 second) to `24:00:00` (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, `1.35` is reduced to `00:01:30` minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, `10.30.23` is reduced to `08:00:00` hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

1 becomes `00:01:00`
1.1 becomes `00:01:00` (rounded down from `00:01:01`)
1.1.1 becomes `01:00:00` (rounded down from `01:01:01`)

This option generates the `INTERVAL(`*`hh:mm:ss`*`)` operand.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `TRANHIST`

Specify the DDname to be used for the Recap report output.

This option generates the `DDNAME(`*`ddname`*`)` operand.

Transaction History DSN:

Defaults: Not specified; DSN is required.

Specify the name of the Transaction History File data set.

If the data set does not exist, IMS PA will create it at run time using the Extract by Interval allocation details specified in **Reporting Allocation Settings** in your Profile Options.

If the data set exists, the new extract records will be appended to the end (`DISP=MOD`). To overwrite the contents of the data set, edit the JCL before submission and specify `DISP=OLD`.

You can specify the extract data set as a generation of a generation data group (GDG) and thereby avoid the need to update the specification between runs.

Selection Criteria

Default: None specified; include all.

Log records can be included or excluded from the history file based on their Transaction Code values. This enables you to include in your report only the transactions that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

For further information, see "Transaction History File samples" on page 747, "Understanding the Transaction History File" on page 759, and "Transaction History File" in the IMS Performance Analyzer *Report Reference*.

Related reference:

"TRANHIST: Transaction History File" on page 435
The TRANHIST operand of the IMSPALOG batch command requests the Transaction History File.

Transaction Transit reports (Form-based)

The options for each form-based Transaction Transit report are described here.

The IMS Performance Analyzer Transaction Transit (Form-based) reports are:
- Transaction Transit List report and extract
- Transaction Transit Summary report and extract

They use IMS logs as input.

Transaction Transit (Form-based) Options

The IMS PA Form-based Transaction Transit Options define control information that applies to the Form-based Transaction Transit reports within the Report Set.

The Form-based Transaction Transit Options apply to the following reports:
- "Transaction Transit List report and extract" on page 320
- "Transaction Transit Summary report and extract" on page 327
- "Transaction Transit reports" on page 300

```
  File  Options  Help
_____________________________________________________________________________

                    SAMPLOG - Transaction Transit Options
Command ===> _____________________________________________________________

Specify Form-based Transit options:

BMPs:
2  1. Treat each BMP syncpoint interval as a transaction
   2. Treat the BMP as a single transaction. All syncpoint intervals are
      accumulated and reported at job end.

Shared queues:
2  1. Only report transactions that were processed on subsystems whose logs
      were input.
   2. Report all transactions, even those processed on other subsystems whose
      logs were not input.

Program switches:
2  1. Report all transactions separately. Program switch sequences are not
      reported as a group.
   2. Track transactions involved in program switch sequences. Program switch
      sequences are reported as a group.
```

Figure 170. Transaction Transit (Form-based) Options

The options are as follows:

BMP treatment option
Default: 2.

This option is only applicable to non-message driven BMPs.

Specify one of the following options:

1 Report each BMP syncpoint interval as a single transaction. With this option, BMP activity can be analyzed in greater detail. Each database checkpoint is analyzed to provide a cross-reference of databases (read-only and updated) against the BMPs that access them.

When using this option, it is recommended that you collect type x'56FA' transaction accounting log records (TRANSTAT=YES) to analyze CPU usage and DLI call activity in more detail for each BMP syncpoint interval.

2 Treat and report each BMP schedule as a single transaction. All syncpoint intervals are accumulated and reported at job end.

Shared queues option
Default: 2, except when inflight processing has been activated. See "Log Global Options" on page 294.

Specify one of the following options:

1 Only report transactions that were processed on subsystems whose logs were input.

2 Report all transactions regardless of where they were processed.

Program switches
Default: 2, except when inflight processing has been activated. See "Log Global Options" on page 294.

Specify one of the following options:

1 Report all transactions independently. Program switch sequences are not reported as a group.

2 Group transactions associated with a program switch sequence for reporting purposes, allowing you to visualize the transaction flow in a program switch sequence, as well as measure end-user response time when a later transaction in the sequence eventually responds back to the end-user.

Related reference:

"Transaction Transit (Form-based) Options" on page 437
Form-based Transaction Transit Options define general control information for the Form-based Transaction Transit reports.

"Report Set JCL" on page 741
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Transaction Transit List report and extract

The options for the Transaction Transit List report and extract are described here.

Report options

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          SAMPLOG - Transit List                  More: < >
Command ===> ____________________________________________________________

Specify required view:                  ──── Report Interval ────
1  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From ___________  ___________
   3. Transit options                   To   ___________  ___________

Reports Required:
                      Output             Digit    Tran Report
    Type     Form +   Messages Precision Grouping Mix  Width
 1. REPORT   ________ NO       3         NO       1    132
 2. ________ ________ NO       3         NO       1
 3. ________ ________ NO       3         NO       1
 4. ________ ________ NO       3         NO       1
 5. ________ ________ NO       3         NO       1

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________  _
 LTERM                  ___    ________  _
 Line                   ___    ________  _
 VTAM Node              ___    ________  _
 Class                  ___    ________  _
 User ID                ___    ________  _
```

Figure 171. Log Transaction Transit List (View 1 of 3): Report options

The report options are:

Specify required view
Default: **1**

To request Form-based reports and extracts, there are too many details for a single view. Specify the required view as follows:

1 The Report view is used to specify details of your report request. These details are relevant when the **Type** of output is either REPORT or EXTRACT.

2 The Extract view is used to specify additional details for an extract. These details are relevant only when the **Type** is EXTRACT.

3 The Transit options view is used to specify additional details for a report or extract.

Enter the number of your choice, or scroll **Left** (**F10**) or **Right** (**F11**) to switch views. **More: < >** is displayed in the top right corner to indicate that more details are available in another view.

Report Interval
Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and to the **To** Date/Time are included in the report.

You can specify either:
- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2018/06/25 7:00 to 2018/06/25 16:30). The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

Type Default: REPORT

Specify whether the output is to be a REPORT or an EXTRACT file.

Form Default: Not specified.

The name of a LIST Report Form used to tailor the format and content of the report or extract. If a Form is not specified, an internally defined default Form will be used.

Output Messages
Default: NO

Specify whether to include transaction output messages in the report as follows:

YES Report all output messages from the transaction.

NO Report only the first output message for the transaction.

Precision
Default: 3

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:
- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

Note: Rounding occurs for elapsed and CPU time values.

Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The > symbol indicates that the report precision is less than the Report Form precision. The > symbol indicates that the report precision is greater than the Report Form precision.

Digit Grouping
Default: NO

Digit grouping affects the formatting of time and count fields. Specify the digit grouping as follows:

YES For reports, digit grouping will include the separator character to delineate each group of three digits, aligned to milliseconds for time and 1000 for count. For time fields, the separator is **.** (period). For count fields, the separator is **,** (comma).

For extracts, the separator **.** (period) delineates each group of three digits in time fields, but no separator appears in count fields. The absence of separators in count fields enables spreadsheet programs to correctly determine the start and end of each value.

NO No digit grouping.

SEC The separator character will delineate the decimal point only. SEC applies to time fields only and assumes YES for count fields. Use SEC for extracts when time fields must be in seconds and fractions of seconds when importing data into a spreadsheet or database.

Tran Mix
Default: **1**

Specify the mix of transactions to be reported. The transaction mixes are:

1 All transactions.

2 All transactions, excluding IFP.

3 IFP transactions only.

4 Transactions that use Fast Path (EMH and/or DEDB).

5 All transactions, excluding BMP.

6 Non-message driven BMP only.

Report Width
Report Forms allow you to request reports wider than the standard 132 character page width. The width of the report depends on the fields requested in the Form. The default format of the report is no more than 132 characters wide, but the report width is impacted by changes to the Report Form, Precision, or Digit Grouping. The Report Form defines the fields in the report. Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The < symbol indicates that the report width is less than the Report Form width as

calculated at **EOR**. The > symbol indicates that the report width is greater than the Report Form width as calculated at **EOR**.

Note that you can view reports in full using SDSF, but when you print wide reports, data that exceeds the maximum printer page width will be truncated.

For an extract, report width is not an issue and is not displayed.

Selection Criteria
Default: Not specified.

Records can be included in or excluded from the report based on their Transaction Code, LTERM, Line or VTAM Node, Message Class, and User ID values. You can also filter on PROGRAM by editing the JCL. This allows you to focus on the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Extract options

```
                          SAMPLOG - Transit List                    More: < >
Command ===> ____________________________________________________________________

Specify required view:                  ----- Report Interval ------
2  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ___________
   3. Transit options                   To   __________  ___________

Extract Data Sets:

    Type     Form +    Extract Data Set Name                          Disp
 1. EXTRACT  ________  ____________________________________________  ___
 2. _______  ________  ____________________________________________  ___
 3. _______  ________  ____________________________________________  ___
 4. _______  ________  ____________________________________________  ___
 5. _______  ________  ____________________________________________  ___

Extract Options:
/  Include Delimiter                   Delimiter . . , (blank is valid)
/  Include Field Labels
_  Numeric Fields in Float Format
```

Figure 172. LOG Transaction Transit List (View 2 of 3): Extract options

The additional extract options are:

Extract Data Set Name
Default: Not specified.

The name of the data set where the extract records are written. If IMS PA is to create the data set at run time, the default allocation attributes specified for **Transaction (MSGQ/FP/Connect) Transit Total Traffic** in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use `DISP=OLD` or `DISP=MOD` according to your request to overwrite or append to the existing data set. Alternatively, you can use a generation data group (GDG) to create a new data set each time the extract is run. When generating the JCL, IMS PA assigns a default DDname of `LISX`*nnnn* where *nnnn* is a sequential number `0001`–`9999` to ensure DDnames are unique.

When specifying the data set name, standard TSO conventions apply. For example, if the TSO option `PROFILE PREFIX` is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

Disp Default: Not specified

Specify a disposition of `OLD` to overwrite the data set contents with the new extract data or `MOD` to append the new extract data.

Include Delimiter
Default: /

Select / to use your specified delimiter to separate fields in the extract records. Leave this option blank if you do not want to use a delimiter to separate fields in the extract records.

Delimiter
Default: **,** (comma)

The field delimiter used to separate the data fields in the extract records. The same delimiter is used to separate the field labels, if present.

Include Field Labels
Default: /

Select / to include field labels as the first record written to the extract data set. Use field labels when importing extracts into spreadsheets, to identify the columns and to aid reporting. Leave this option blank if you do not want field labels.

Numeric Fields in Float Format
Default: Not specified.

Select / to write numeric fields in the extract in FLOAT format. Use FLOAT format if you plan to import the extract into a DB2 table. When the DB2 Load Utility is used, it will interpret all numerical fields reliably and consistently in FLOAT format.

- Time fields are in units of seconds. For example, 1.234567 represents 1.234567 seconds.
- Count fields are real numbers. For example, average message length is 100.23 characters.

Leave this option blank if you want numerical fields in the extract to be written in character format according to the Precision and Digit Grouping options. This is suitable for importing into spreadsheets that expect character-based data.

Transit options

```
                          SAMPLOG - Transit List                    More: < >
Command ===> ____________________________________________________________________

Specify required view:                  ----- Report Interval ------
3  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From ___________  ____________
   3. Transit options                   To   ___________  ____________

Reports Required:
                                      Start Completion
    Type     Form +    DDname         Level   Level
 1. REPORT   ________  LIST0001        2       3
 2. ________ ________  LIST0002        2       3
 3. ________ ________  LIST0003        2       3
 4. ________ ________  LIST0004        2       3
 5. ________ ________  LIST0005        2       3
```

Figure 173. LOG Transaction Transit List (View 3 of 3): Transit options

The additional transit options are:

DDname

Default: IMS PA assigns a default DDname of LIST*nnnn* where *nnnn* is a sequential number 0001–9999 to ensure each report has a unique DDname.

The DDname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The DDname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same DDname without consequence, however a mix of reports using the same DDname may interleave the print lines.

In the event of the output being an extract file, the DDname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract file name and record count.

Start Level

Default: 2

Start level is an attribute that IMS PA assigns to every transaction reported in the IMS log. It is an indicator of how far the transaction lifecycle has already progressed at the start of the IMS log. Together with Completion level, Start level is an indicator of the completeness of information collected about the reported transaction. For example, you may choose to report only those transactions that started and ended with the IMS log to guarantee complete performance metrics.

Specify Start level to instruct form-based reporting to report only those transactions with a Start level less than or equal to the required value. For example: Specify 1 to report start level 1 transactions only; specify 2 to report start level 1 and 2 transactions, and so on. This option generates the STARTLVL operand.

The IMS transaction start levels are:

1 The transaction first arrives in this log.

For message driven transactions, the type 01 input message is available indicating the transaction has arrived onto the message queue. For non-message driven transactions (BMP, DBCTL,

ODBM), the type 08 program start record is available indicating the start of processing. Use start level 1 when analyzing input message arrival rates and lengths.

2 The transaction starts processing in this log.

For message driven transactions only, the type 01 input message is not available, but the type 31 DLI record is available indicating that transaction dependent region processing starts in this IMS log. The complete transit time breakdown is available, including input queue time (which is derived). Use Start level 2 when analyzing transaction dependent region processing time.

3 Dependent region processing is already in progress at the start of this log.

The type 08 application start record is not available for long running BMP or thread processes that commenced processing prior to this log. Processing start time is derived from the first log event for the Job. Processing elapsed time is calculated from this time to the job end (type 07). Use Start level 3 when analyzing all activity that occurred in the IMS log.

Completion Level

Default: 3

Enter a value between 0 and 6 to specify the minimum IMS transaction completion level for reporting.

IMS PA assigns a completion level to every transaction. Form-based reporting can specify a minimum completion level, instructing IMS PA to report only those transactions that have reached this level of completion.

The IMS transaction completion levels are:

0 Transaction message received. IMS message is a message switch or generated output message, not a transaction. Use Completion level 0 to analyze all message queue activity, not when transaction transit information is required.

1 Transaction input message enqueued onto the IMS message queue. Use Completion level 1 to analyze transaction message queue activity, not when transaction transit information is required.

2 Transaction has started processing in the dependent region but has not completed processing. Only input queue time is available for reporting.

3 Transaction has finished processing in the dependent region but has not sent the output message to the destination LTERM. Input queue and processing times are available for reporting.

4 Transaction has ended but resource utilization statistics (from the type 07 application termination record) are not available, possibly due to WFI processing (schedule not ended). Input queue, processing, output queue and total times are available for reporting.

5 Transaction has ended and resource utilization statistics are available, but approximations only. Type 07 application termination record statistics are apportioned equally amongst all transactions processed by the program schedule. All application statistics fields are available for reporting.

6 Transaction has ended and resource utilization statistics are available. Type 56FA transaction-level accounting record provides accurate and reliable information. All application statistics fields are available for reporting. Non-message driven BMP transactions are also included.

Related concepts:

"LIST Report Form" on page 248
The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.

Related reference:

"LIST: Transaction Transit List report and extract (Form-based)" on page 438
The LIST operand of the IMSPALOG batch command requests the Transaction Transit List report or extract for IMS fields.

Transaction Transit Summary report and extract

The Transaction Transit Summary report and extract options are described here.

```
                        SAMPLOG - Transit Summary                More: < >
Command ===> ____________________________________________________________

Specify required view:                  ------ Report Interval ------
1  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From ___________  ___________
   3. Transit options                   To   ___________  ___________

Reports Required:
                       Time     Totals Precision   Digit    Tran Report
    Type     Form +    Interval Level  Time Count  Grouping Mix  Width
 1. REPORT   ________  00:01:00  0      3    0      NO       1    125 <
 2. ________ ________  00:01:00  0      3    0      NO       1
 3. ________ ________  00:01:00  0      3    0      NO       1
 4. ________ ________  00:01:00  0      3    0      NO       1
 5. ________ ________  00:01:00  0      3    0      NO       1

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 Program                ___    ________   _
 LTERM                  ___    ________   _
 VTAM Node              ___    ________   _
 Class                  ___    ________   _
 User ID                ___    ________   _
```

Figure 174. Log Transaction Transit Summary (View 1 of 3): Report options

Like the Form-based List, the Form-based Summary has three views. The extract and transit option views are the same for the List and the Summary. Most of the report options are the same for the List and Summary. For a description of these, see "Transaction Transit List report and extract" on page 320.

The report options that are different for the Summary report are:

Form Default: Not specified.

The name of a SUMMARY Report Form used to tailor the format and content of the extract. If a Form is not specified, an internally defined default Form will be used.

Time Interval

Default: 00:01:00

The time interval applies when you want to summarize activity over time. It is used when you specify a SUMMARY Report Form which has one or both sort fields STARTIMS or STARTCON included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each. Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval report lines for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval report lines for each day of data. Minutes take precedence for an abbreviated entry. For example: 1 becomes 00:01:00, 1.1 becomes 00:01:00 (rounded down from 00:01:01), and 1.1.1 becomes 01:00:00 (rounded down from 01:01:01).

Totals Level

Default: 0

Specify the grand total and subtotal levels required for reporting as follows:

Blank No totals.

0 Grand totals only, no subtotals.

1–7 Grand total and subtotals to the corresponding key level.

Precision

Time Default: 3

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:
- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

Note: Rounding occurs for elapsed and CPU time values.

Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The > symbol indicates that the report precision is less than the Report Form precision. The > symbol indicates that the report precision is greater than the Report Form precision.

Count Default: 0

Specifies the precision of count fields, applicable only when reported as average, from 0 to 2 decimal places.

Extract Data Set Name

Default: Not specified.

The name of the data set where the extract records are written. If IMS PA is to create the data set at run time, the default allocation attributes specified for **Summary (CPU Usage, Database Update Activity and Connect) Extracts** in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use `DISP=OLD` or `DISP=MOD` according to your request to overwrite or append to the existing data set. Alternatively, you can use a generation data group (GDG) to create a new data set each time the extract is run. When generating the JCL, IMS PA assigns a default ddname of `SUMX`*`nnnn`* where *`nnnn`* is a sequential number `0001`–`9999` to ensure ddnames are unique.

When specifying the data set name, standard TSO conventions apply. For example, if the TSO option `PROFILE PREFIX` is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

DDname

Default: IMS PA assigns a default ddname of `SUMM`*`nnnn`* where *`nnnn`* is a sequential number `0001`–`9999` to ensure each report has a unique ddname.

The ddname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The ddname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same ddname without consequence, however a mix of reports using the same ddname may interleave the print lines.

In the event of the output being an extract file, the ddname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract file name and record count.

Related concepts:

"SUMMARY Report Form" on page 251
The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

Related reference:

"SUMMARY: Transaction Transit Summary report and extract (Form-based)" on page 440
The SUMMARY operand of the IMSPALOG batch command requests the Transaction Transit Summary Report or Extract for IMS fields.

IMS Transaction Index

The IMS Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS log about that transaction.

For details, see Chapter 19, "IMS Transaction Index," on page 271.

Related reference:

"INDEX: IMS Transaction Index" on page 445
The INDEX operand of the IMSPALOG batch command requests the IMS Transaction Index.

Resource Usage and Availability reports

The options for each Resource Usage and Availability report are described here.

The Resource Usage and Availability Reports are:
- Dashboard
- Management Exception
- Transaction Resource Usage
- Resource Availability
- CPU Usage
- Internal Resource Usage
- MSC Link Statistics
- Message Queue Utilization
- Database Update Activity
- Region Histogram
- OSAM Sequential Buffering
- Deadlock
- System Checkpoint
- BMP Checkpoint
- Gap Analysis
- Cold Start Analysis

Dashboard report

The Dashboard report provides a quick overview of critical system performance indicators, including transaction throughput and IMS system resources. It can highlight potential performance problems quickly, providing a springboard to other reports that provide more detailed information.

IMS PA generates the report command:

```
IMSPALOG DASHBOARD(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                            SAMPLOG - Dashboard
Command ===> ____________________________________________________________

Specify report options.

Report Output DDname  DASH
```

Figure 175. Dashboard report options

The only option is:

Report Output DDname
Default: DASH

Specify the DDname to be used for the report output.

Related reference:

"DASHBOARD: Dashboard report" on page 445
The DASHBOARD operand of the IMSPALOG batch command requests the Dashboard report.

Management Exception report

The Management Exception report is designed to give managers a concise survey of selected, critical operands from other IMS PA reports. The report shows, by exception, which operands are outside specified boundaries.

The report optionally calculates accumulated averages, and can provide a formatted print of the Averages Data Set.

IMS PA generates the report command:

```
IMSPALOG MGREX(...)
```

```
  File  Options  Help
_____________________________________________________________________________

                        SAMPLOG - Management Exception
Command ===> _____________________________________________________________

Specify report options.

Reports Required:                          ------ Report Interval ------
/  Transaction Exception/Average                YYYY/MM/DD  HH:MM:SS:TH
   Error Conditions Log:                   From __________  ___________
   /  Program Abend                        To   __________  ___________
   /  Backout Failure
   /  Security Violation                   Report Output DDname  MGRXDD
   /  I/O Error
   /  Snap Trace

Report Options
Processing Type:                           Select to Modify:
1  1. Exception Report                     _  Exception Report Options
   2. Print Averages Data Set              _  Averages Data Sets Specification
   Exclude "OTHERS" from report
_

                                  Validation Warning
  Expectation Set  ________  +
```

Figure 176. Management Exception Report Options

The options are as follows:

Reports Required

Option:**Transaction Exception/Average Error Conditions Log:**

- **Error Conditions Log**
- **Program Abend**
- **Backout Failure**
- **Security Violation**
- **I/O Error**
- **Snap Trace**

Default: All selected.

Select with a / to produce the required reports.

To produce the Management Exception Summary report, select **Transaction Exception/Average** and specify options in the **Transaction Exception/Average Report Options** area at the bottom of the panel.

To produce the Error Conditions log, select one or more of the five types of errors listed below **Error Conditions Log**. Only those selected are included in the report. If none of the five are selected, then the Error Conditions log is not produced.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `MGRXDD`

Specify the DDname to be used for the report output.

Related reference:

"MGREX: Management Exception report" on page 446
The MGREX operand of the IMSPALOG batch command requests the Management Exception report.

Transaction Exception/Average report options

These options only have effect if the Transaction Exception/Average report is selected. They do not affect the Error Conditions Log.

Processing Type
Options:
1. **Exception Report**
2. **Print Averages Data Set**

Default: 1 (Produce the Management Exception Summary report and don't print the Averages Data Set)

Select **1** to produce the Management Exception Summary report showing by Transaction Code, information for "This Run", and if requested, the Average and Expectation.

Select **2** to produce the Management Exception Summary showing only the contents of the input Averages Data Set.

Exclude "OTHERS" from report
Default: Not selected. "OTHERS" are reported.

This option is used in conjunction with transaction code selection criteria.

By default, transaction codes that are excluded by filtering are reported in a group called `*OTHERS*`, and included in the final `*SYSTEM*` total.

Enter `/` to select this option so that transaction codes that are excluded by filtering are not reported, and consequently not included in the final `*SYSTEM*` total.

This option generates the `NOOTHERS` operand. For example, `IMSPALOG MGREX(NOOTHERS,INCL(TRAN(...)))`

Expectation Set
Default: None.

Specify the name of an Expectation Set which contains user-supplied expected values to be used in producing the exception report. The report will flag occurrences which fall outside the specified expected values. "Specifying Expectations" on page 137 describes how to specify expected values in an Expectation Set.

If no Expectation Set is specified, there are no performance expectations with which to compare the log data, in which case the report shows "This Run" but contains no Expectation information.

Exception Report Options
Select with an E or S to display the Transaction Exception Options panel where you can view or edit additional report options and qualifiers. See Figure 177.

Averages Data Sets Specification
Select with an E or S to display the Transaction Averages Data Sets panel where you can specify the Averages Data Sets, and optionally view or edit their contents. See "Transaction Averages data sets specification" on page 334.

Transaction Exception report options

This panel defines further options and qualifiers for the Management Exception report. They only apply if **Transaction Exception/Average** is selected on the Management Exception panel.

```
                SAMPLOG - Transaction Exception Options
Command ===> ____________________________________________________________

Specify Transaction Exception report options.

Exception Processing Queues:
 Number of Queues      ___   (0-255)
 Omit Message After    ___   Minutes

Report Options:
_  List All Transactions (not just exceptions)

Selection Criteria:
    Object Type       Inc/Exc  Object +  List   Validation Warning
 Transaction Code       ___    ________   _
```

Figure 177. Management Exception Report: Transaction Exception Options

The options are as follows:

Number of Queues
Default: None.

The number of exception processing queues used in processing the Management Exception report. Varying the number of queues may improve performance when you are doing high-volume processing. The maximum number of queues that can be specified is 255.

Omit Message After *nnn* Minutes
Default: None; messages are not omitted.

The number of minutes after which a message is deleted from the management exception processing queue. (Deletion occurs at checkpoint record processing.) This may improve performance when transactions are held on IMS message queues for a long time. The maximum number of minutes that can be specified is 999.

List All Transactions
Default: Not selected; only list exceptions.

Select with a / to list all transactions on the report, not just the exceptions.

Selection Criteria

Default: None specified. Include all.

Records can be included or excluded based on their Transaction Code. This enables you to report only the transactions of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

By default, transaction codes and programs that are excluded by filtering are reported in a line item called *OTHERS*, and included in the final *SYSTEM* total. If you do not want the excluded transaction codes included in the *SYSTEM* total, you can omit it from the report by selecting the option **Exclude "OTHERS" from report**.

Transaction Averages data sets specification

This panel specifies the input and output data sets to be used for calculating and storing the accumulated averages for the Management Exception report. The data sets are only used if **Transaction Exception/Average** is selected on the Management Exception panel.

Chapter 9, "Averages Data Sets," on page 143 describes how to allocate Averages Data Sets and how to modify their contents.

```
            SAMPLOG - Transaction Averages Data Sets
Command ===> ____________________________________________________

Specify the Averages Data Sets for this Report Set, optionally
indicating whether you want to Edit or View either data set.

Input Data Set:                                      E/V
_____________________________________________________    _

Output Data Set:
_____________________________________________________    _
```

Figure 178. Management Exception Report: Transaction Averages Data Sets

The options are as follows:

Input Data Set
Output Data Set

Defaults: None.

Specify the name of the input and output Averages Data Sets. If no input data set is specified, then averages are not applied. If no output data set is specified, then updated averages are not saved. If no input is specified, an output data set can still be created.

Management exception processing uses the input data set, if it is specified, for reading accumulated totals and averages. Each time management exception processing is invoked, it does the following:

- Extracts the total from the input Averages Data Set
- Calculates averages by dividing by the number of occurrences represented by the totals
- Compares these averages with the current values to identify exceptions to be reported (where expectations are specified in terms of averages)

When processing finishes, the current values are added to those in the input Averages Data Set, and the results are stored in the output Averages Data Set if it is specified. If you specify the input and output data sets as

generations (0) and (+1) respectively of the same generation data group (GDG) then the specification need not be updated between report runs.

E/V Default: None.

Enter `E` or `V` to edit or view the data set.

Note: If characteristics of your IMS installation change, such as installing a faster processor, the contents of the Averages Data Set should be modified to make the historic values with the slower processor comparable to the current values with the new processor.

Transaction Resource Usage report

This report provides a comprehensive overview of transaction resource usage.

IMS PA generates the report command:

```
IMSPALOG TRANRESU(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                    SAMPLOG - Transaction Resource Usage
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                        ──── Report Interval ────
   Long List                                  YYYY/MM/DD  HH:MM:SS:TH
/  Long Summary                          From __________  ___________
_  Short (DLI Call) Summary              To   __________  ___________

Long Report Options:                     Report Output DDnames:
/  Include DB Calls                       Long List . . . . . . . TRANRESU
/  Include DC Calls                       Long Summary  . . . . TRANRESU
_  Include Other DLI Calls                DLI Call Summary  . . TRANRESU
_  Include ENQ/DEQ Counts

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Region ID              ___    ________   _
 Transaction Code       ___    ________   _
 Program (PSB)          ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 179. Transaction Resource Usage Report Options

The report options are as follows:

Reports Required

Default: **Long Summary**

Enter / to request any combination of reports:

Long List

This report lists statistics for each selected transaction using the IMS Transaction Terminate Accounting Log Record (type 07). It is similar in format to the Long Summary report with the exclusion of averages. The report provides additional transaction information such as Program name and Completion Codes. This report is used to review the performance of individual transactions.

Long Summary
This is a two-part report generated using the IMS Transaction Terminate Accounting Log Record (type 07). Each part consists of two sections, Totals and call group statistics. The first part is a summary of statistics by region type (such as BMP, MPP, CPI-C) giving an overall view of region performance. The second part provides a breakdown by transaction for each region giving an overall view of transaction performance.

Short (DLI Call) Summary
This report lists the transaction code, the total number of messages for each transaction, CPU, DB and DC call averages per message for each transaction using the IMS Transaction Terminate Accounting Log Record (type 07). The report also provides a total line that includes the total number of messages for all selected transactions and the average CPU, DB & DC calls per message.

Long Report Options
Default: **Include DB Calls** and **Include DC Calls** selected.

Enter / to include any combination of the following types of data in the Long Summary and List reports:
- **Include DB Calls**
- **Include DC Calls**
- **Include Other DLI Calls**
- **Include ENQueue/DEQueue Counts**

Report Interval
Default: Not specified; no further filtering on date/time.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `TRANRESU`

Specify the DDname to be used for each of the reports.

Selection Criteria
Default: No values specified; include all records without filtering.

Records can be included in or excluded from the report based on their Region ID, Transaction Code, Program (PSB), and IMS Subsystem ID values. This enables you to include in your report only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists. Region ID may be specified by PST Number, or by Message Region Jobname. Masking is not supported for Region ID by PST objects.

Related reference:

"TRANRESU: Transaction Resource Usage report" on page 448
The TRANRESU operand of the IMSPALOG batch command requests the Transaction Resource Usage report.

Resource Availability report

The Resource Availability report indicates the relative amount of time a specific resource is active, idle, or unavailable.

IMS PA generates the report command:

```
IMSPALOG AVAIL(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                       SAMPLOG - Resource Availability
Command ===> _________________________________________________________________

Specify report options.

Reports Required:                       ───── Report Interval ──────
/  Region                                    YYYY/MM/DD  HH:MM:SS:TH
/  Transaction Code                     From __________  ___________
/  Program (PSB)                        To   __________  ___________
/  Database
_  Line or VTAM Node                    Report Output DDname  AVALDD

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Region ID              ___    ________   _
 Transaction Code       ___    ________   _
 Program (PSB)          ___    ________   _
 Database               ___    ________   _
 Line                   ___    ________   _
 VTAM Node              ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 180. Resource Availability Report Options

The options are as follows:

Reports Required

Options:
- **Region**
- **Transaction Code**
- **Program (PSB)**
- **Database**
- **Line or VTAM Node**

Default: All except Line/Node.

Select with a / to produce a separate report ordered by, respectively, Region, Transaction Code, Program, Database, and Line or VTAM Node.

Reports not selected will not be produced.

Report Interval

Default: Not specified.

Specify the reporting interval within that specified by **Start** and **Stop** Date/Time on the Log Global Options panel. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 305).

Report Output DDname

Default: AVALDD

Specify the DDname to be used for the report output.

Selection Criteria

Default: None specified; include all.

Records can be included in or excluded from the report based on their Region ID, Transaction Code, Program (PSB), Database, Line, VTAM Node and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists. Region ID may be specified by PST Number, or by Message Region Jobname. Masking is not supported for Region ID by PST or Line objects.

Related reference:

"AVAIL: Resource Availability report" on page 450
The AVAIL operand of the IMSPALOG batch command requests the Resource Availability report.

CPU Usage report and extract

The CPU Usage report gives statistics for CPU time and elapsed time during a specified period for regions, transactions and programs.

IMS PA generates the report command:

```
IMSPALOG CPUR(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                            SAMPLOG - CPU Usage
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                          ──── Report Interval ────
    --- Ordering Operands ---                   YYYY/MM/DD  HH:MM:SS:TH
    Level-1  Level-2  Level-3            From __________  ___________
 1.  REGN     PROG     TRAN               To   __________  ___________
 2.  ____     ____     ____
 3.  ____     ____     ____               Report Output DDname  CPURDD
 4.  ____     ____     ____
 5.  ____     ____     ____               Report Options:
                                          _  Exclude "OTHERS" from report
Extract Data Set:
 Data Set Name . . . ____________________________________________

Graph Distributions:                  Validation Warning
 Processing Time (CPU)  ________  +
 Elapsed Time           ________  +

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Region ID              ___    ________   _
 Transaction Code       ___    ________   _
 Program (PSB)          ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 181. CPU Usage Report Options

The options are as follows:

Reports Required (ordered by Region, Program, Transaction Code):
Default: Single report in the order REGN PROG TRAN

Up to 5 different reports can be requested, using the keywords REGN (region), PROG (program), and TRAN (transaction code) to specify their

sequence. For each report, either one, two, or three of the keywords can be specified to represent up to three levels of nesting. Duplicate report requests are ignored.

Exclude "OTHERS" from report
Default: Not selected.

This option is used in conjunction with Transaction Code and Program (PSB) Selection Criteria. By default, transaction codes and programs that are excluded by the qualifiers are reported in a group called *OTHERS*, and included in the report subtotals and totals.

Enter / to select this option so that transaction codes and programs that are excluded by the qualifiers are not reported, and not included in the report subtotals and totals.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: CPURDD

Specify the DDname to be used for the report output.

Extract Data Set
Default: Not specified; extract is not produced.

To extract CPU Usage details to an output file, specify a name for the extract data set that is generated in the Report Set JCL with DDname CPURXTRO. Note that you can specify global options to include column headings in the extract file and to use a comma as the field delimiter.

Graph Distributions
Defaults: If no Distribution is specified, the corresponding sample Distribution is applied at run time:
- $IPDIST1 for the **Processing Time (CPU) graph**
- $IPDIST2 for the **Elapsed Time graph**

Specify the name of the Distributions to define the attributes of the graphs.

For the **Processing Time (CPU)** graph, the sample Distribution $IPDIST1 is provided. It specifies:
Ranges (Limits) = 25,50,75,100,150,200,300,500,1000
Title = Sc Mil (for seconds and milliseconds)
Multiplier = 1
Edit Mask = ZZZ,ZZZ.ZZ9

For the **Elapsed Time** graph, the sample Distribution $IPDIST2 is provided. It specifies:
Ranges (Limits) = 300,600,900,1200,1500,2000,3000,5000,10000
Title = Sc Mil (for seconds and milliseconds)
Multiplier = 1
Edit Mask = ZZZ,ZZZ.ZZ9

See Chapter 11, "Distributions," on page 157 for information on how to define a Distribution.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their Region ID, Transaction Code, Program (PSB), and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists. Region ID may be specified by PST Number, or by Message Region Jobname. Masking is not supported for Region ID by PST objects.

Data excluded by the selection criteria are reported as one group labeled *OTHERS* and included in report subtotals and totals. If you don't want the excluded data included in the totals, you can omit the *OTHERS* category by selecting **Exclude "OTHERS" from report**.

Related reference:

"CPUR: CPU Usage report and extract" on page 451
The CPUR operand of the IMSPALOG command requests the CPU Usage report and optionally an extract file.

Internal Resource Usage reports

The Internal Resource Usage reports provide statistics on the use of various IMS pools and resources.

IMS PA generates the report command:

```
IMSPALOG IRUR(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                     SAMPLOG - Internal Resource Usage
Command ===> ____________________________________________________________

Specify report options.

Report Options:                          ────── Report Interval ──────
 Minimum CHKP Interval  0___  Minutes          YYYY/MM/DD  HH:MM:SS:TH
                                         From ___________  ____________
   Include Fast Path Transactions        To   ___________  ____________
 _ Print Report after each CHKP
 _
                                         Report Output DDname  IRURDD___
Reports Required:
/  Message Queue Pool                    /  Logical Logger Statistics
/  Message Format Buffer Pool            /  IRLM System
/  OSAM Buffer Pool                      /  IRLM Subsystem
/  VSAM Buffer Pool                      /  RACF
/  Variable Pools                        /  Virtual Storage usage
/  Application Scheduling Statistics     /  IMODULE Statistics
/  Program Isolation Statistics          /  EWLM Statistics
/  Latch Statistics                      /  64-bit Cache Statistics
/  DL/I Call Statistics                  /  Fast Path 64-bit Buffer Statistics
/  Miscellaneous Statistics              /  User Exit Statistics
/  Storage Statistics                    /  Individual TCB Statistics
/  Fixed Pool Usage Statistics           /  64-bit Storage Statistics
/  Dispatcher/Dynamic SAP Statistics

Selection Criteria:
    Object Type       Inc/Exc  Object +   List    Validation Warning
 IMS Subsystem ID       ___    ________    _
```

Figure 182. Internal Resource Usage Report Options

The options are as follows:

Minimum CHKP Interval (in minutes)
Default: 0 (zero)

Checkpoints occurring less than this interval after the preceding checkpoint are excluded from the report. Valid values are 0 to 9999.

Include Fast Path Transactions
Default: Not selected; Fast Path transactions are not included.

Enter / to include the Fast Path transaction count in the Miscellaneous Statistics report.

Print Report after each CHKP
Default: Not selected. Print report only at the end of the run.

Enter / to print a report after each system checkpoint encountered during log processing.

This options takes precedence over the Global Option **Report Break Points** for this report. However, if **Report Break Points** is specified as anything other than `STOP` or `blank`, unpredictable results may occur.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `IRURDD`

Specify the DDname to be used for the report output.

Reports Required
Default: All selected.

Select with a / the reports that are required. Reports not selected will not be produced.

A description of the Internal Resource Usage reports follows:

Message Queue Pool
This report provides information related to the activity and I/O associated with IMS message queues. This activity is a key indicator as to the performance of your IMS system.

Message Format Buffer Pool
This report provides information related to the activity associated with message formatting.

OSAM Buffer Pool
This report provides information related to the activity in each OSAM subpool. Subpools which have no activity in the reporting period are not reported on. The final report contains cumulative statistics for all of the OSAM buffer pools.

VSAM Buffer Pool
This report provides information related to the activity in each VSAM subpool. Subpools which have no activity in the reporting period are not reported on. The final report contains cumulative statistics for all of the VSAM buffer pools.

Variable Pools
This report provides information as to the size and utilization of

the various DMB and PSB pools. Shortages in these pools, particularly the DMB pool, can cause scheduling delays. Use this report to detect over or under specification of the pool sizes.

Application Scheduling Statistics
This report provides information relating to the various types of scheduling failures and scheduling activity during the report period.

Program Isolation Statistics
This report provides information about the size and usage of the PI pool.

Latch Statistics
This report provides information regarding each IMS latch and the activity associated with that latch.

DL/I Call Statistics
This report provides a count of all programs scheduled, transactions processed, and DL/I calls issued by call type.

Miscellaneous Statistics
This report provides information on the highest PST used, the highest and current number of conversations in use, transaction counts by transaction type (conversational, WFI, non-recoverable and response mode), RECANY buffer usage, and IMS and statistics record versions. Optionally, the report includes Fast Path transactions.

Storage Statistics
This report provides information about the various storage pools used by IMS. Pools not used in the reporting period are not reported on.

Fixed Pool Usage Statistics
This report provides information about the fixed pools used by IMS. A number of statistics are provided for each buffer size in the pool; these include size, high water marks, and a number of other performance related statistics associated with each buffer.

Dispatcher/Dynamic SAP Statistics
This report provides performance related information for the various IMS TCBs.

Logical Logger Statistics
This report provides various statistics describing the performance of the IMS log and WADS. I/O counts and buffer wait counts can be used to see if any system performance problems are being caused by bad logger or WADS I/O times.

IRLM System
This report provides information on the performance of the IRLM system. Counts of the various IRLM activities, as well as buffer and CSA usage, deadlock frequency and VTAM sends are reported.

IRLM Subsystem (User)
This report provides information on the performance of the IRLM that relates to a particular IMS subsystem. Counts of the various IRLM activities are reported.

RACF This report provides information related to the performance of the

RACF® TCBs, such as counts of the various RACF activities, and the CPU and elapsed time used by these RACF activities.

Virtual Storage usage
This report provides information related to general storage use in the system and in the IMS control region. The report is in two sections, Global Storage and Local (CTL Region) storage.

IMODULE Statistics
This report provides information related to IMODULE services. Statistics are provided for IMODULE requests that obtained or deleted common storage. Statistics are also provided for IMODULE requests by call type.

EWLM Statistics
This report provides statistics for EWLM correlator token table.

64-bit Cache Statistics
This report provides statistics for the 64-bit cache storage manager.

Fast Path 64-bit Buffer Statistics
This report provides statistics for the Fast Path 64-bit buffer manager.

User Exit Statistics
Introduced with IMS V12, this report provides statistics for User Exit modules.

Individual TCB Statistics
Introduced with IMS V14, this report provides performance related information for individual IMS TCBs which are aggregated in the x'**450F**' dispatcher statistics log record.

64-bit Storage Statistics
Introduced with IMS V14, this report provides information about the various 64-bit storage pools used by IMS.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their IMS Subsystem ID values. This enables you to report only the systems of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:

“IRUR: Internal Resource Usage report” on page 452
The IRUR operand of the IMSPALOG batch command requests the Internal Resource Usage reports.

MSC Link Statistics report

The MSC Link Statistics report contains information on the use of MSC links from the X'4513' log record.

IMS PA generates the report command:

```
IMSPALOG MSCLSTAT(...)
```

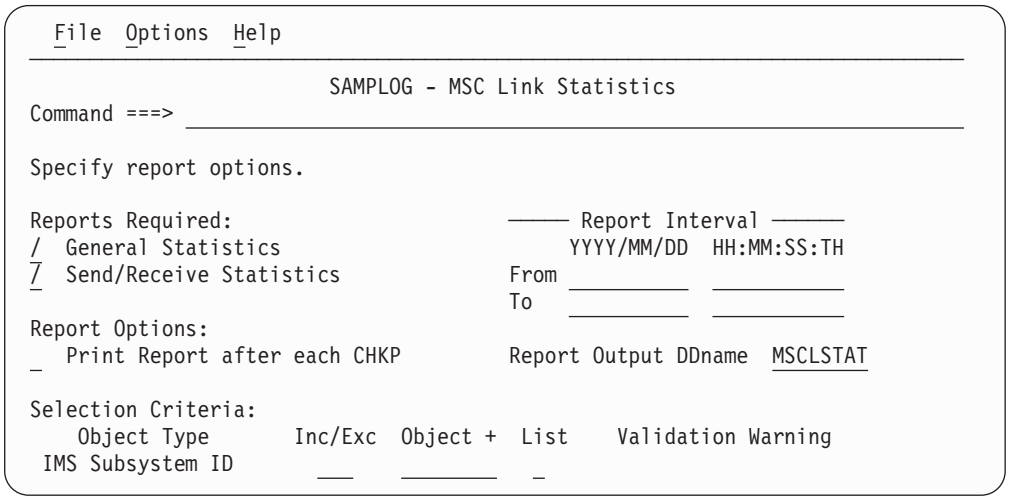


Figure 183. MSC Link Statistics Report Options

The options are as follows:

Reports Required
Default: Both selected; produce both reports.

Select with a / to request one or both reports:

General Statistics
This report provides summary information on the overall usage of each MSC link.

Send/Receive Statistics
This report provides summary information for each MSC link with a more detailed breakdown of Send and Receive traffic.

Print Report after each CHKP
Default: Not selected. Print report only at the end of the run.

Enter / to print a report after each system checkpoint encountered during log processing.

This options takes precedence over the Global Option **Report Break Points** for this report. However, if **Report Break Points** is specified as anything other than STOP or blank, unpredictable results may occur.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: MSCLSTAT

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their IMS Subsystem ID values. This enables you to report only the systems of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"MSCLSTAT: MSC Link Statistics report" on page 454
The MSCLSTAT operand of the IMSPALOG batch command requests the MSC Link Statistics report.

Message Queue Utilization report

The Message Queue Utilization report contains information on the use of message queues.

IMS PA generates the report command:

```
IMSPALOG MSGQ(...)
```

```
 File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                    SAMPLOG - Message Queue Utilization
Command ===> ____________________________________________________________

Specify report options.

Report Options:                          ──── Report Interval ────
 Record Size Interval  10   Bytes             YYYY/MM/DD  HH:MM:SS:TH
                                         From ___________  ___________
                                         To   ___________  ___________
 _  Only Enqueued Messages
 _  Record length (not message)          Report Output DDname  MQURDD

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 IMS Subsystem ID       ___    ________   _
```

Figure 184. Message Queue Utilization Report Options

The options are as follows:

Record Size Interval
Default: 10

Specify the record size interval, in bytes, to be reported on each line of the report. Valid values are from 0 to 999 inclusive. 0 is set to the default at run time.

Only Enqueued Messages
Default: Not specified. Include messages that are not enqueued.

Include in the report only those messages which are enqueued in message data sets.

Record length (not message)
Default: Not selected. Complete messages are reported.

Report individual records, not complete messages. This option may be used for shared queues where OBJAVGSZ is determined based on individual records, not complete messages which may span multiple records.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: MQURDD

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their IMS Subsystem ID values. This enables you to report only the systems of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"MSGQ: Message Queue Utilization report" on page 455
The MSGQ operand of the IMSPALOG batch command requests the Message Queue Utilization report.

Database Update Activity report and extract

The Database Update Activity report can help you determine the cost of database calls. It indicates the number of purge writes at sync point time to a database and provides a count of actual updates made to each database in the time period being reported. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

IMS PA generates the report command:

```
IMSPALOG DBUPDATE(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                     SAMPLOG - Database Update Activity
Command ===> ____________________________________________________________

Specify report options.

Report Options:                              ──── Report Interval ────
 Format . . . 1  (1 or 2)                         YYYY/MM/DD  HH:MM:SS:TH
 Uncommitted Block Updates Limit 10000       From __________  ___________
                                             To   __________  ___________
 _  Order by Database and Program Name
                                             Report Output DDname  DBUADD

Extract Data Set:
 Data Set Name . . . ____________________________________________

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Database               ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 185. Database Update Activity Report Options

The options are as follows:

Format

Default: 1

Specify the format of the report (1 or 2). Reports generated using format 2 provide a faster, more concise breakdown of database update activity. Format 2 is the recommended report option.

Uncommitted Block Updates Limit

Default: 10000

Specify a limit on the number of uncommitted block updates to track for the Database Update Activity report. The purpose of this limit is to ensure that IMS PA doesn't run out of storage and abend.

The maximum value that can be specified is 32000. When the maximum number of uncommitted block updates for a database is reached, IMS PA flushes the update queues and reports ******** for the block update count for that database.

If there is not enough storage to continue processing, IMS PA flushes all block update queues for subsequent database updates. Message IPI0050E is issued stating, by database, the highest uncommitted block update count at flush time.

Order by Database and Program Name

Default: Not selected.

If selected, the program name is included in the report and the report is ordered by database and program name.

If not selected, the report is ordered by database name only, and the program name is not reported.

Report Interval

Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname

Default: DBUADD

Specify the DDname to be used for the report output.

Extract Data Set

Default: Not specified; extract is not produced.

To extract Database Update Activity details to an output file, specify a name for the extract data set. This will be included in the Report Set JCL with DDname DBUAXTRO. Note that you can specify global options to include column headings in the extract file and to use a comma as the field delimiter.

Selection Criteria

Default: None specified; include all.

Records can be included in or excluded from the report based on their Database name and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"DBUPDATE: Database Update Activity report and extract" on page 456
The DBUPDATE operand of the IMSPALOG batch command requests the Database Update Activity report.

Region Histogram report

The Region Histogram report is a graphic display of region activity. It shows the times a region is active or idle and the patterns of transaction scheduling in each region.

IMS PA generates the report command:

```
IMSPALOG HISTGRAM(...)
```

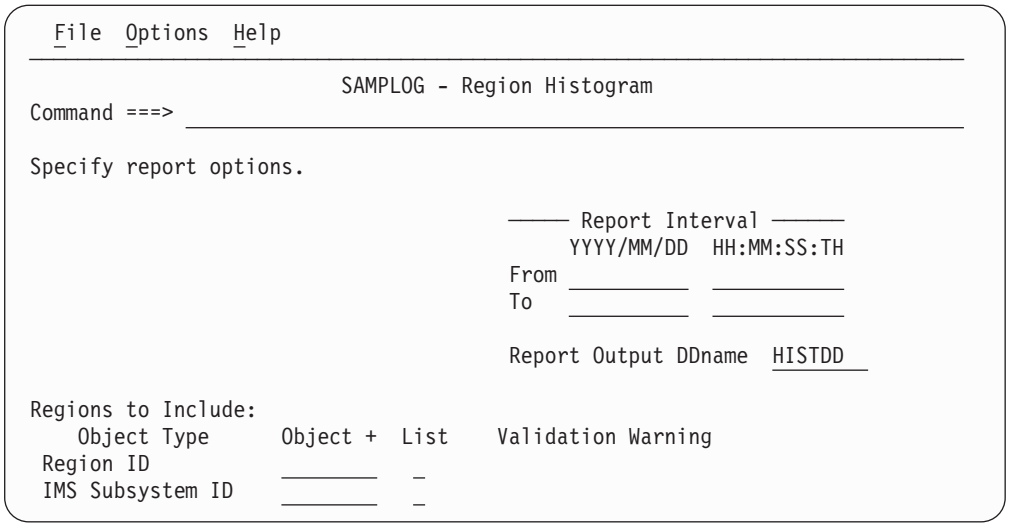


Figure 186. Region Histogram (Log) Report Options

The options are as follows:

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: HISTDD

Specify the DDname to be used for the report output.

Regions to Include
Default: First 13 active regions encountered in the input data.

Specify a Region ID or the name of a Region ID Object List to nominate which regions to include in the report, up to a maximum of 13 regions. Region ID can be specified by PST Number or by Message Region Jobname. The included Region IDs will apply to each included IMS Subsystem, up to a maximum of 13 regions. You can specify a masking pattern for IMS Subsystem ID. Masking is not supported for Region ID, however a range of values can be specified in an Object List. If a requested region is not found in the input data, a report column will still be created for it.

If you specify an Object List, you can enter the name directly, or to select one from a list of the appropriate type, position the cursor in the Object field and press **Prompt** (**F4**). Select **List** with a / to denote that it is an Object List and not a single value.

Related reference:

"HISTGRAM: Region Histogram (Log) report" on page 457
The HISTGRAM operand of the IMSPALOG batch command requests the Region Histogram report.

OSAM Sequential Buffering report

The OSAM Sequential Buffering report provides statistics on the usage of OSAM sequential buffers, by buffer pool and by PSB.

IMS PA generates the report command:

```
IMSPALOG SB(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                    SAMPLOG - OSAM Sequential Buffering
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                          ──── Report Interval ─────
/  Activity Log                                 YYYY/MM/DD  HH:MM:SS:TH
/  Program (PSB) Summary                 From ___________  ___________
                                         To   ___________  ___________

                                         Report Output DDname  SBDD

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Program (PSB)          ___    ________   _
 Database               ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 187. OSAM Sequential Buffering Report Options

The options are as follows:

Reports Required

Options:

- **Activity Log**
- **Program (PSB) Summary**

Default: Both selected.

Select **Activity Log** with a / to produce the following reports:

- Sequential Buffering Summary for Region, a one-page summary of buffer pool status and activity
- SB Detail Statistics, a three-part report for each buffer pool

Select **Program (PSB) Summary** with a / to produce the OSAM SB Program Summary, a summary of activity by PSB.

Report Interval

Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: SBDD

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Log records can be included in or excluded from the report by their Program (PSB), Database and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"SB: OSAM Sequential Buffering report" on page 458
The SB operand of the IMSPALOG batch command requests the OSAM Sequential Buffering report.

Deadlock report

The Deadlock report provides a comprehensive analysis of deadlock events.

IMS PA generates the report command:

```
IMSPALOG DEADLOCK(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                              SAMPLOG - Deadlock
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                        ──── Report Interval ──────
   List                                       YYYY/MM/DD  HH:MM:SS:TH
/  Summary                               From ___________  ___________
                                         To   ___________  ___________

                                         Report Output DDnames:
                                          List . . . . DEADLOCK
                                          Summary  . . DEADLOCK
```

Figure 188. Deadlock Report Options

The options are as follows:

Reports Required:
Default: **Summary**

Enter / to select one or both of the **List** or **Summary** reports.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDnames

Default: DEADLOCK (for both List and Summary reports)

Specify the DDname to be used for the List and Summary report output. You can use different DDnames for each report type.

If both List and Summary reports are selected, and their DDnames are the same, then only one report will be produced, containing both the List and Summary reports.

Related reference:

"DEADLOCK: Deadlock report" on page 458
The DEADLOCK operand of the IMSPALOG batch command requests the Deadlock report.

System Checkpoint report

The System Checkpoint report provides a detailed analysis of IMS internal checkpoint activity.

IMS PA generates the report command:

```
IMSPALOG CHECKPOINT(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                        SAMPLOG - System Checkpoint
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                        ──── Report Interval ────
_  Database Definitions                       YYYY/MM/DD  HH:MM:SS:TH
_  Transaction Definitions                 From __________  ___________
_  Terminal:                               To   __________  ___________
   _  Sorted by LTERM
   _  Sorted by PTERM                      Report Output DDname  CHECKPT
_  Record Events

Graph Distribution:                   Validation Warning
 Checkpoint Duration     ________  +

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Database               ___    ________   _
 Transaction Code       ___    ________   _
 LTERM                  ___    ________   _
 VTAM Node              ___    ________   _
 Line/Terminal          ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 189. System Checkpoint Report Options

The options are:

Reports Required:

Options:

- Database Definitions
- Transaction Definitions
- Terminal:
  - Sorted by LTERM
  - Sorted by PTERM

- Record Events

Enter / to select any combination of reports.

Database Definitions shows a list of databases and is produced from data in the DDIR blocks.

Transaction Definitions provides a list of transactions and is created from data contained in the SMB and PDIR blocks.

Terminal produces a list of terminals from data contained in the CNT, CTB, and SPQB blocks. You can request the report by LTERM, by PTERM, or both.

Record Events shows the details of each individual checkpoint.

Checkpoint Duration
Default: Not specified.

Produce a checkpoint duration distribution graph.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `CHECKPT`

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Log records can be included in or excluded from the report by their Database, Transaction Code, LTERM, VTAM Node, Line/Terminal, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"CHECKPOINT: System Checkpoint report" on page 459
The CHECKPOINT operand of the IMSPALOG batch command requests the System Checkpoint report.

BMP Checkpoint report

The BMP Checkpoint report provides an analysis of BMP checkpoint frequency that can affect online performance and system restartability.

IMS PA generates the report command:

```
IMSPALOG BMPCHKP(...)
```

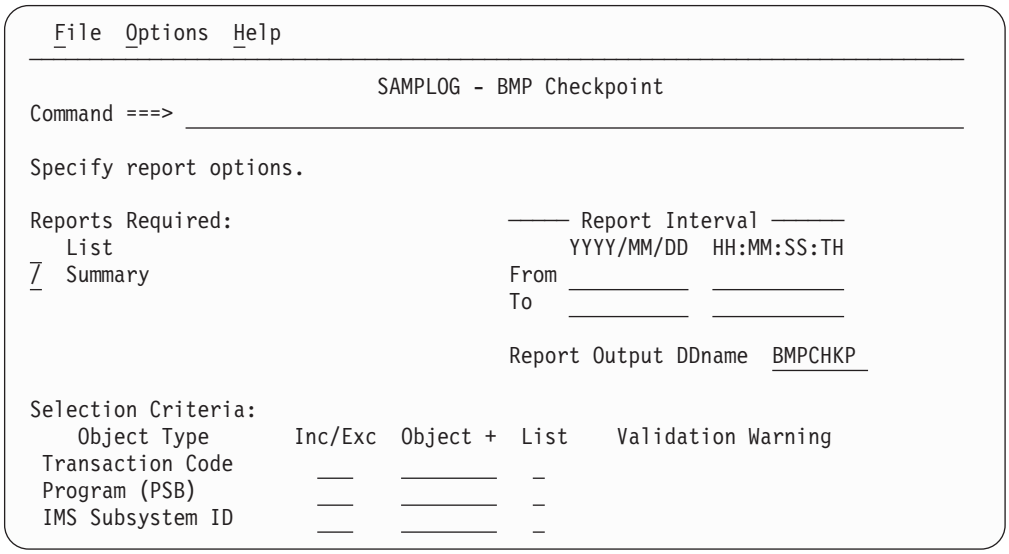


Figure 190. BMP Checkpoint report

The options are as follows:

Reports Required:
Default: **Summary**

Enter / to select one or both of the following reports:

List The List report provides a breakdown of individual BMP checkpoint activity.

This option generates the LIST operand.

Summary
The Summary report provides an overview of each BMP program. This is the default.

This option generates the SUMMARY operand.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: BMPCHKP

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Log records can be included in or excluded from the report by their Transaction Code, Program (PSB) name, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"BMPCHKP: BMP Checkpoint report" on page 461
The BMPCHKP operand of the IMSPALOG batch command requests the BMP Checkpoint report.

Gap Analysis report

The Log Gap Analysis report contains information on periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS to slow down.

IMS PA generates the report command:

```
IMSPALOG GAP(...)
```

```
  File  Options  Help
------------------------------------------------------------------------------
Command ===> ____________________________________________________________

Specify report options.

Report Options:                          ------ Report Interval ------
1  1. By IMSID and Sysplex                    YYYY/MM/DD  HH:MM:SS:TH
   2. By IMS Subsystem only            From __________  ___________
   3. Across Sysplex only              To   __________  ___________

                                       Report Output DDname  GAPS____
Processing Options:
 Gap Threshold . . . 5.000000  seconds (s.thmiju)

 _  Ignore IMS 6D records

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 IMS Subsystem ID       ___    ________   _
```

Figure 191. Log Gap Analysis Report Options

The options are as follows:

Report Options

Default: **1. By IMSID and Sysplex**

The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.

Select **1** to produce one report for each subsystem followed by a total system wide report.

Select **2** to produce only the reports for each subsystem.

Select **3** to produce only the total system wide report.

Gap Threshold

Default: `5.000000` seconds.

Specify a threshold interval in the range `0.000001` to `9.999999` seconds. This defines the maximum elapsed time tolerated between log records. Every gap longer than the threshold is reported.

Ignore IMS 6D records

Default: Not selected, all records are included.

Exclude IMS x'6D' records from the Gap Analysis report. If using FDBR there is an x'6D' record written every 1 second which may distort the report.

Report Interval

Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: GAPS

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their IMS Subsystem ID values. This enables you to report only the systems of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"GAP: Gap Analysis report" on page 462
The GAP operand of the IMSPALOG batch command requests the Gap Analysis report.

Cold Start Analysis report

The Cold Start Analysis report provides a point-in-time snapshot of in-train activity, answering the following questions in the event of a cold start: "What input messages (transactions) are lost?" and "What are the incomplete units-of-work, and what database changes did they make?"

An IMS cold start initializes the message queues, the dynamic log, and the restart data sets. The consequences of a cold start can be destructive:

1. All input and output messages on the IMS message queue are lost
2. If IMS terminated abnormally, incomplete transactions may have:
   - Full-function database changes that are not backed-out, leaving databases corrupted.
   - External subsystem activity that is left in doubt.

IMS PA generates the report command:

```
IMSPALOG COLDSTART(...)
```

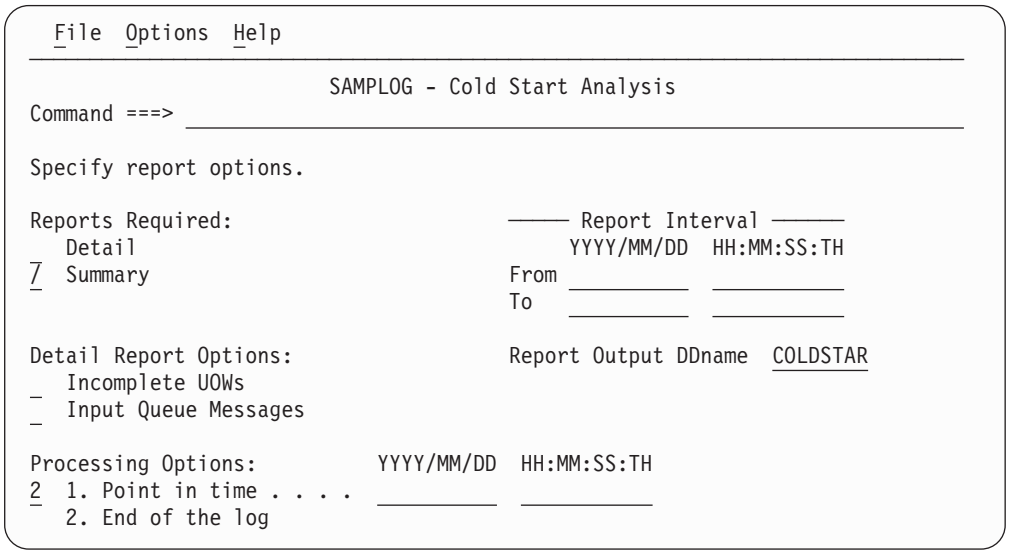


Figure 192. Cold Start Analysis Report Options

The options are as follows:

Reports Required
Default: **Summary**

Select with a / to request the detail or summary report or both. Report content depends on the selected report options (Incomplete UOWs, Input Queue Messages).

- The **Detail** report shows each incomplete unit of work with database update and ESAF activity, and messages enqueued but not dequeued.
- The **Summary** report provides counts by transaction code, database, and external subsystem only.

Report Options
Default: Both selected.

Select with a / to include any of the following in the report:

- **Incomplete UOWs** (units of work) with database update or ESAF (external subsystem) activity.
- **Input Queue Messages** enqueued but not dequeued.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: COLDSTAR

Specify the DDname to be used for the report output.

Processing Options
Default: 2 **End of the Log**

Specify when the selected Cold Start Analysis report is to be produced, either:

1. At a specific point in time. Specify both date and time in the same format as the Report Interval date/time.

2. At the end of the input log.

Related reference:

"COLDSTART: Cold Start Analysis report" on page 463
The COLDSTART operand of the IMSPALOG batch command requests the Cold Start Analysis report.

Fast Path Transit reports

The Fast Path Transit reports contain detailed transit time and resource usage statistics for Fast Path transactions.

They are:
- Fast Path Transit Analysis
- Fast Path Transit Log
- Fast Path Transit Extract by Interval
- Fast Path Transaction Exception

Fast Path Transit Options

The IMS PA Fast Path Transit Options define control information that applies to the Fast Path Transit Reports within the Report Set.

The Fast Path Transit Options apply to the following reports:
- Fast Path Transit Analysis
- Fast Path Transit Log
- Fast Path Transit Extract by Interval
- Fast Path Transaction Exception

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                      SAMPLOG - Fast Path Transit Options
Command ===> ____________________________________________________________

Specify Fast Path Transit options.

Processing Options:
 Peak Transaction Time Percentage  . . 90   (50-100%)

Interval Options:
 Time Interval . . . . . . . . . . . . 15   Minutes
 Align Time Interval to Even Hour  . . YES  (Yes or No)

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       INC    TL000001   /
```

Figure 193. Fast Path Transit Options Panel

The options are as follows:

Peak Transaction Time Percentage
Default: 90

Specify a percentile *nnn* between 50 and 100 to report the transit time within which *nnn*% of the transactions complete. Computations assume a normal distribution. Thus, 50 gives the median transit time for the sample.

Specify 90 or greater to determine the response time for most transactions. This is useful, for example, when monitoring a service level agreement which states that 95% of transactions must complete within *nn* milliseconds.

This percentile calculation is applicable to the Fast Path Transit Analysis report.

It does not apply to the Extract by Interval during Report Set processing. However, a percentile calculation can be applied to extracted data at a later stage of IMS PA processing via the Graphing and Export facility.

Time Interval

Default: 15

Specify the value *nnnn*, in minutes, of the reporting interval for Fast Path Transit reports and extracts. Data is accumulated every *nnnn* minutes from the start of the log input for the following reports:

- Fast Path Transit Analysis (by Time of Input)
- Fast Path Transit Extract by Interval

The data included in the first reported interval is that from the first record whose time stamp is on or after the specified Start/From date/time. However, the specified Stop/To date/time may fall within the last reported interval, and in order to complete the interval, data whose time stamp is after the Stop/To date/time may therefore be included.

Note: If **Align Time Interval to Even Hour** is selected, it is recommended that you specify a value that is a factor or a multiple of 60 to achieve consistent alignment to the hour.

Align Time Interval to Even Hour

Default: YES

This option applies to the following reports:

- Fast Path Transit Analysis (by Time of Input)
- Fast Path Transit Extract by Interval

Specify YES to align the reporting interval to the hour. Data is accumulated according to the specified **Time Interval** starting from the hour of the first log input record, but with printing commencing from the first time interval containing data.

Example: If the time of the first record is 10:37:05, the accumulation starts at 10:00:00. If the specified time interval is 30 minutes, the reported start times of the intervals are then 10.30.00, 11.00.00, 11.30.00, 12.00.00, and so on; whereas for a time interval of 25 minutes, the reported times are 10.25.00, 10.50.00, 11.15.00, 11.40.00, 12.05.00, and so on. In both cases, 10.00.00 does not appear in the report as the interval contains no data.

Note: To achieve alignment on every hour, specify a time interval which is exactly divisible into an hour. This is recommended if merging of input logs is required, to ensure that time intervals are aligned and the validity of results is retained.

Specify NO for no time interval alignment.

Example: If the time of the first record is 10:37:05, and the specified time interval is 30 minutes, the reported start times of the intervals are then 10.37.05, 11.07.05, 11.37.05, and so on; and for a time interval of 25 minutes, the reported times are 10.37.05, 11.02.05, 11.27.05, and so on.

Selection Criteria
Default: None specified; include all.

Specify transaction codes to be included in or excluded from all Fast Path Transit reports in the Report Set. Within this primary filtering of transaction codes, a further filtering is available on the following reports:
- Fast Path Transit Analysis
- Fast Path Transit Log
- Fast Path Transit Extract by Interval

This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:

“Fast Path (EMH) Transit Options” on page 464
These operands of the IMSPALOG command define general control information for the Fast Path Transit reports.

Fast Path Transit Analysis report

The Fast Path Transit Analysis report can show response time performance by transaction code, routing code, userid, and time of sync point.

IMS PA generates the report command:

```
IMSPALOG FPANALYSIS(...)
```

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                   SAMPLOG - Fast Path Transit Analysis
Command ===> _________________________________________________________________

Specify report options.

Reports Required:                     ────── Report Interval ───────
/  Transaction Code                        YYYY/MM/DD  HH:MM:SS:TH
_  Routing Code                       From __________  ___________
_  User ID                            To   __________  ___________
_  Time (Interval: 15 Minutes)
                                      Report Output DDname  FPTTRPT
Selection Criteria:
    Object Type      Inc/Exc  Object +  List   Validation Warning
 Transaction Code      ___    ________   _
 Routing Code          ___    ________   _
 User ID               ___    ________   _
```

Figure 194. Fast Path Transit Analysis Report Options

The options are:

Reports Required
Options:
- **Transaction Code**
- **Routing Code**
- **User ID**
- **Time (Interval: *nnn* Minutes)**

Default: Single report ordered by Transaction Code.

Select with a / to produce up to four reports ordered by Transaction Code, Routing Code, User ID, or Time.

For reporting by Time, the interval of reporting is specified in minutes by the **Time Interval** option, and interval alignment is specified by the **Align Time Interval to Even Hour** option on the Fast Path Transit Options panel.

Report Interval
Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and before the **To** Date/Time are included in the report.

You can specify one of the following:

Date/time pairs or dates only
This indicates a *date-time range* (for example, `2018/06/25 7:00` to `2018/06/25 16:30`). The **From** Date/Time must be before the **To** Date/Time.

Times only
This indicates a particular *time slot* (for example, `9:00` to `10:00` each day). Specifying the **From** Time greater than the **To** Time indicates a time slot across midnight.

Neither date/time pair
All input records are selected.

Rules governing the date and time are the same as those for the Global Report Interval (see "Log Global Options" on page 294).

Report Output DDname
Default: `FPTTRPT`

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified. However, Transaction Code Selection Criteria specified on the Fast Path Transit Options panel is applied at run time.

Fast Path log records can be included in or excluded from the report based on their Transaction Code, Routing Code, and User ID values. For Transaction Codes, this panel provides a secondary filter within the primary filter specified on the Fast Path Transit Options panel. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"FPANALYSIS: Fast Path Transit Analysis report" on page 465
The FPANALYSIS operand of the IMSPALOG batch command requests the Fast Path Transit Analysis report.

Fast Path Transit Log report

The Fast Path Transit Log is a chronological listing of all IFP transactions processed during the reporting interval.

IMS PA generates the report command:

```
IMSPALOG FPLOG(...)
```

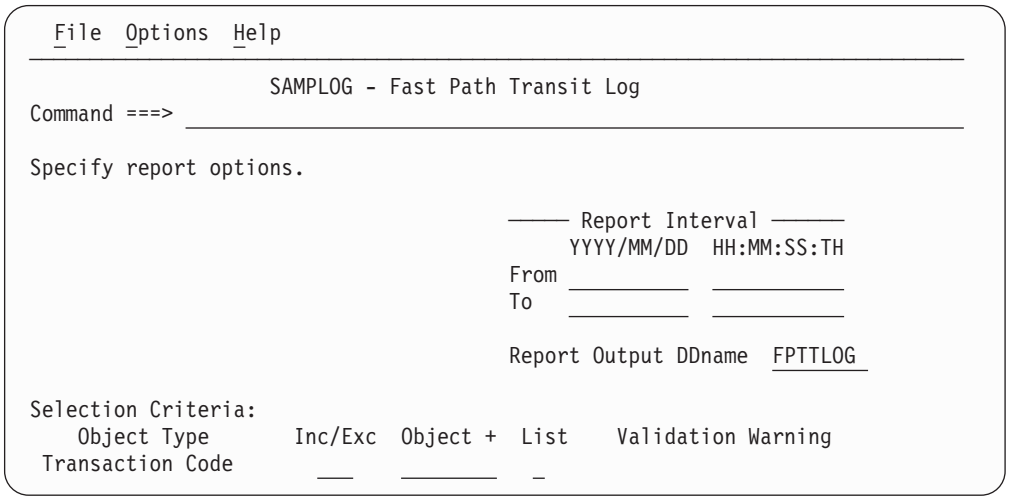


Figure 195. Fast Path Transit Log Report Options

The options are as follows:

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: FPTTLOG

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified. However, Transaction Code Selection Criteria specified on the Fast Path Transit Options panel is applied at run time.

Records can be included in or excluded from the report based on their Transaction Code. This panel provides a secondary filter within the primary filter specified on the Fast Path Transit Options panel. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"FPLOG: Fast Path Transit Log report" on page 466
The FPLOG operand of the IMSPALOG batch command requests the Fast Path Transit Log report.

Fast Path Transit Extract by Interval

The Fast Path Transit Extract by Interval creates extracts by time interval of Fast Path transaction transit time data.

IMS PA generates the report command:

```
IMSPALOG FPEXTRACT(...)
```

This panel provides a second level of control for extract processing. Values specified on the Log Global Options and Fast Path Transit Options panels provide a primary level of control.

Note: If merging extracted data files, check that the specified values for the filters (Transaction Code Selection Criteria) and the interval options (Time Interval, Align Time Interval to Even Hour) are consistent for all the extracts to ensure that the results of the merge are meaningful.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
               SAMPLOG - Fast Path Transit Extract By Interval
Command ===> ____________________________________________________________

Specify extract options.

Extract Data Required:                  ──── Report Interval ────
/  By Transaction Within Interval            YYYY/MM/DD  HH:MM:SS:TH
/  By Interval                          From __________  ___________
                                        To   __________  ___________

                                        Report Output DDname  FPTTERPT

Extract Data Sets:
 Input  ____________________________________________
 Output ____________________________________________

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _

Note: The extract time interval, set in Fast Path (EMH) Transit Options,
      is 15 minutes and is aligned to even hours.
```

Figure 196. Fast Path Transit Extract by Interval Options

The options are as follows:

Extract Data Required

Options:

- **By Transaction Within Interval**
- **By Interval**

Default: Both selected.

Select with a / to produce the required extract.

Ensure that you select as a minimum criteria, the data you may wish to graph or export. For example:

- To graph or export *by interval*, you must first extract *by interval*.
- To graph or export *by transaction*, you must first extract *by transaction within interval*.

If no selection is made, no extract is produced. For more information on graphing, see Chapter 3, “Processing extract data sets,” on page 45.

Select **By Transaction Within Interval** to accumulate data for individual transaction codes within each time interval.

For example, if during a particular time interval there are, on the input log file, 3 records for transaction A, 2 records for transaction B, and no records for transaction C, the extract processing writes 2 records to the extract file, 1 with the aggregate data for transaction A, and 1 with the aggregate data for transaction B.

Select **By Interval** to accumulate data for all transactions in each time interval.

For example, in the previous scenario, for the particular interval only 1 record is written to the extract file with the aggregate data for both transactions A and B.

Select both to obtain by time interval, the aggregate data for the individual transaction codes and their totals.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see page "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `FPTTERPT`

Specify the DDname to be used for the report output.

Extract Data Sets: Input and Output
Defaults: None.

Extract processing uses the input data set, if it is specified, for reading previously extracted data, merging it with the data extracted from the current log, and writing it to the output data set. The extracted data is stored in a format suitable for further IMS PA processing, and is not directly readable by external programs.

The input data set is optional, but if specified, it must exist.

The output data set must be specified. If it does not exist, IMS PA will create the data set at the time the extract is run using the allocation details specified for the **Transit Extract by Interval Data Set** in **Reporting Allocation Settings** from the action bar **Options** menu. If the output data set exists, the JCL will be built with `DISP=MOD` and the new extract data will be appended to the end. To overwrite the contents, edit the JCL and specify `DISP=OLD`.

The same data set may be specified for input and output, although this is not recommended. You may specify the input and output data sets as generations (0) and (+1) respectively of the same Generation Data Group (GDG) and thereby avoid the need to update the specification between runs.

Selection Criteria
Default: None specified. However, the Transaction Code Selection Criteria specified on the Fast Path (EMH) Transit Options panel are applied at run time.

Fast Path log records can be included in or excluded from the extract based on their Transaction Code. This panel provides a secondary filter within the primary filter specified on the Fast Path (EMH) Transit Options panel. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Ensure that your selection contains the transaction codes you may wish to export or graph. See Chapter 3, "Processing extract data sets," on page 45.

Related reference:

"FPEXTRACT: Fast Path Transit Extract by Interval" on page 466
The FPEXTRACT operand of the IMSPALOG batch command requests the Fast Path Transit Extract by Interval.

Fast Path Transaction Exception report and extract

The Fast Path Transaction Exception reports provide detailed and summary information about IFP transactions, as well as message queue transactions that use Fast Path databases.

IMS PA generates the report command:

```
IMSPALOG FPTRNEX(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                  SAMPLOG - Fast Path Transaction Exception
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                          ──── Report Interval ─────
/  Exception Detail Log                         YYYY/MM/DD  HH:MM:SS:TH
   _  DEDB Calls                           From ___________  ___________
   _  Buffer Usage                         To   ___________  ___________
   _  VSO
   _  Shared EMHQ                          Report Output DDname  FPTTXLOG
/  Summary by Transaction
/  Sync Failure Summary

Report Options:
_  Include Non-IFP Transactions

Transaction Limits:            Validation Warning
 Expectation Set  ________  +

Extract Data Sets:
 Total Traffic      ____________________________________________
 Exception Traffic  ____________________________________________
```

Figure 197. Fast Path Transaction Exception Report and Extract Options

The options are as follows:

Reports Required

Options:

- **Exception Detail Log**
  - **DEDB Calls**
  - **Buffer Usage**
  - **VSO**
  - **Shared EMHQ**
- **Summary by Transaction**
- **Sync Failure Summary**

Default: All three reports selected, but additional detail lines (**DEDB Calls**, **Buffer Usage**, **VSO**, **Shared EMHQ**) not selected.

Select with a / to produce the required reports.

To produce the Fast Path Transaction Exception Log report, select **Exception Detail Log** and optionally select one or more of the four types of transaction detail records to include in the report.

To produce the Fast Path Transaction Exception Summary report, select **Summary by Transaction**.

To produce the Fast Path Transaction Synchronization Failure Summary, select **Sync Failure Summary**.

The Fast Path Transaction Exception Recap report is always produced at the end to give a summary of the processing of the selected reports.

Report Interval

Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname

Default: `FPTTXLOG`

Specify the DDname to be used for the report output.

Include Non-IFP Transactions

Default: Not selected; do not include non-IFP transactions.

Select with a / to report all non-IFP transactions as exceptions.

Non-IFP transactions are message queue transactions that use Fast Path databases.

Expectation Set

Default: None.

Specify the name of an Expectation Set which contains user-supplied expected values for any of the following transaction attributes:

- Input queue time
- Processing time
- Output queue time
- Total transit time
- FP DB DL/I calls
- DEDB waits

You can enter the name directly, or to choose an Expectation Set from a list, position the cursor in the field and press **Prompt** (**F4**).

"Specifying Expectations" on page 137 describes how to specify expected values in an Expectation Set.

The report will show a transaction as an exception if it is outside the range for any of the values defined in the Expectation Set. If the Expectation Set is not specified, then the report shows all transactions as exceptions.

Extract Data Sets

Options:

- **Total Traffic**
- **Exception Traffic**

Defaults: None.

Specify the names of either or both of the following optional extract data sets:

- The Total Traffic data set. All Fast Path transactions have a detail record written to this data set. It is equivalent to the DBFULTA0 Total Traffic data set.

- The Exception Traffic data set. Only Fast Path exception transactions have an exception record written to this data set. It is equivalent to the DBFULTA0 Exception Traffic data set.

If the data set does not exist, IMS PA will create it at the time the report and extract are run using the allocation details specified in **Reporting Allocation Settings** from the action bar **Options** menu.

If the data set exists, new extract data will be appended to the end (`DISP=MOD`). To overwrite the contents of the extract data set, edit the JCL and specify `DISP=OLD`.

You may specify the extract data set as a generation (say +1) of a generation data group (GDG) and thereby avoid the need to update the specification between runs.

Related reference:

"FPTRNEX: Fast Path Transaction Exception report and extract" on page 468
The FPTRNEX operand of the IMSPALOG batch command requests the Fast Path Transaction Exception reports.

Fast Path Resource Usage reports

The options for each Fast Path Resource Usage report are described here.

The IMS PA Fast Path Resource Usage Reports are:
- Fast Path Resource Usage and Contention
- Fast Path Database Call Statistics
- IFP Region Occupancy
- EMH Message Statistics
- DEDB Update Activity
- DEDB Update Trace
- VSO Statistics

Fast Path Resource Usage and Contention report

The Fast Path Resource Usage and Contention report provides detailed statistics on the Fast Path resources used by IFP transactions and non-IFP programs.

IMS PA generates the report command:

```
IMSPALOG FPIRUC(...)
```

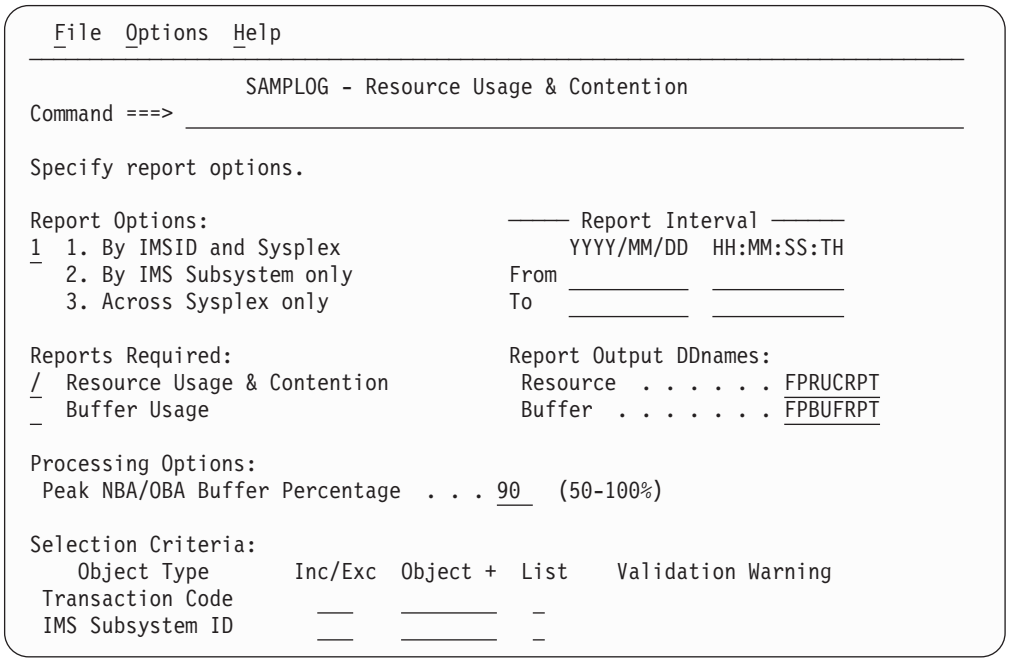


Figure 198. Fast Path Resource Usage and Contention Report

The options are as follows:

Report Options

Default: **1. By IMSID and Sysplex**

The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.

Select **1** to produce one report for each subsystem followed by a total system wide report.

Select **2** to produce only the reports for each subsystem.

Select **3** to produce only the total system wide report.

Report Interval

Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Reports Required

Default: **Resource Usage & Contention** report.

Select with a / one or both of the reports:

- The **Resource Usage & Contention** report provides wide-ranging information about transaction Fast Path Resource Usage including DEDB calls, ADS I/O, VSO activity, Fast Path Buffer usage, Contention, Logging, Sync Failure and Transaction rate.
- The **Buffer Usage** report provides a more detailed analysis of Fast Path Buffer usage.

Report Output DDnames

Specify the DDnames to be used for the report output for:

- FP Resource Usage & Contention report. Default: `FPRUCRPT`
- FP Buffer Usage report. Default: `FPBUFRPT`

Peak NBA/OBA Buffer Percentage
Default: 90

Specify a peak percentage *nnn* between 50 and 100.

The FP Buffer Usage report provides a statistical estimate of the peak percentile for transaction NBA and OBA Buffer usage. For example, specify 95 to report the peak NBA and OBA buffer usage for 95% of transactions.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their Transaction Code and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"FPIRUC: Fast Path Resource Usage and Contention report" on page 469
The FPIRUC operand of the IMSPALOG batch command requests the Fast Path Resource Usage and Contention report or the Fast Path Buffer Usage report or both.

Fast Path Database Call Statistics report

The Fast Path Database Call Statistics report provides a breakdown of DL/I call function codes by transaction code. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

IMS PA generates the report command:

```
IMSPALOG FPDBCALL(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                  SAMPLOG - Database Call Statistics
Command ===> ____________________________________________________________

Specify report options.

Report Options:                          ──── Report Interval ─────
1  1. By IMSID and Sysplex                    YYYY/MM/DD  HH:MM:SS:TH
   2. By IMS Subsystem only            From __________  ___________
   3. Across Sysplex only              To   __________  ___________

                                       Report Output DDname  FPDBCRPT

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 199. Fast Path Database Call Statistics Report Options

The options are as follows:

Report Options
Default: **1. By IMSID and Sysplex**

The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.

Select **1** to produce one report for each subsystem followed by a total system wide report.

Select **2** to produce only the reports for each subsystem.

Select **3** to produce only the total system wide report.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `FPDBCRPT`

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their Transaction Code and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"FPDBCALL: Fast Path Database Call Statistics report" on page 471
The FPDBCALL operand of the IMSPALOG batch command requests the Fast Path Database Call Statistics report.

IFP Region Occupancy report

The IFP Region Occupancy Report provides approximate region occupancy rates for IFP regions.

IMS PA generates the report command:

```
IMSPALOG FPRGNO(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                        SAMPLOG - IFP Region Occupancy
Command ===> _________________________________________________________________

Specify report options.

                                        ───── Report Interval ─────
                                             YYYY/MM/DD  HH:MM:SS:TH
                                        From __________  ___________
                                        To   __________  ___________

                                        Report Output DDname  FPRGORPT

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Region ID by PST       ___    ________   _
 Program (PSB)          ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 200. IFP Region Occupancy Report Options

The options are as follows:

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see “Transaction Transit Analysis report” on page 305).

Report Output DDname
Default: FPRGORPT

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their Region ID by PST number, Program (PSB) name, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern (but not for Region ID by PST number), or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:
“FPRGNO: IFP Region Occupancy report” on page 471
The FPRGNO operand of the IMSPALOG batch command requests the IFP Region Occupancy report.

EMH Message Statistics report

The EMH Message Statistics report contains information on the number and length of EMH messages that are processed by balancing groups and shared EMH queues.

IMS PA generates the report command:

```
IMSPALOG FPEMHQ(...)
```

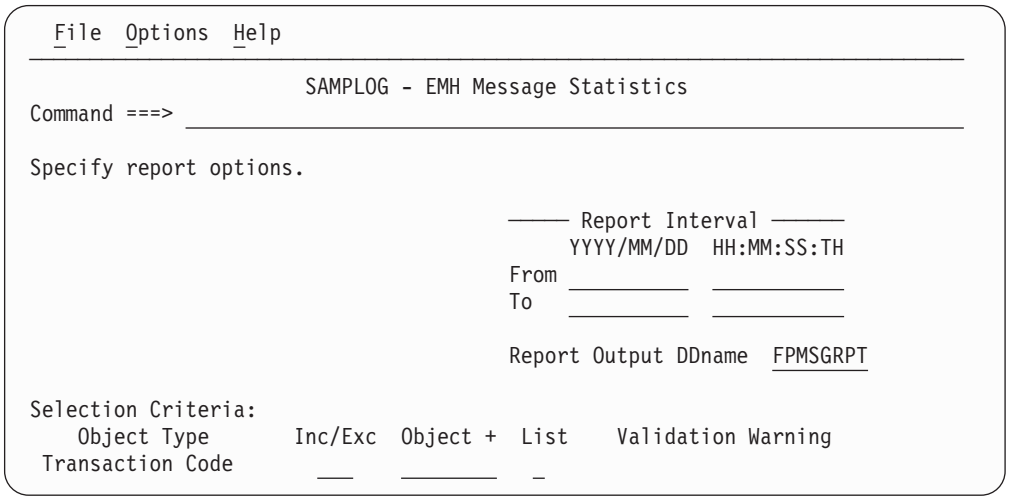


Figure 201. EMH Message Statistics Report Options

The options are as follows:

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: FPMSGRPT

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their Transaction Code. Unlike the other Fast Path Resource Usage reports, there is no support for IMS Subsystem ID filtering as the report is sysplex wide to give details on local and global transaction message lengths. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"FPEMHQ: EMH Message Statistics report" on page 472
The FPEMHQ operand of the IMSPALOG batch command requests the EMH Message Statistics report.

DEDB Update Activity report

The DEDB Update Activity report can help you determine the cost of DEDB database calls, and shows the rate of processing against your DEDB databases.

IMS PA generates the report command:

```
IMSPALOG FPDBUPD(...)
```

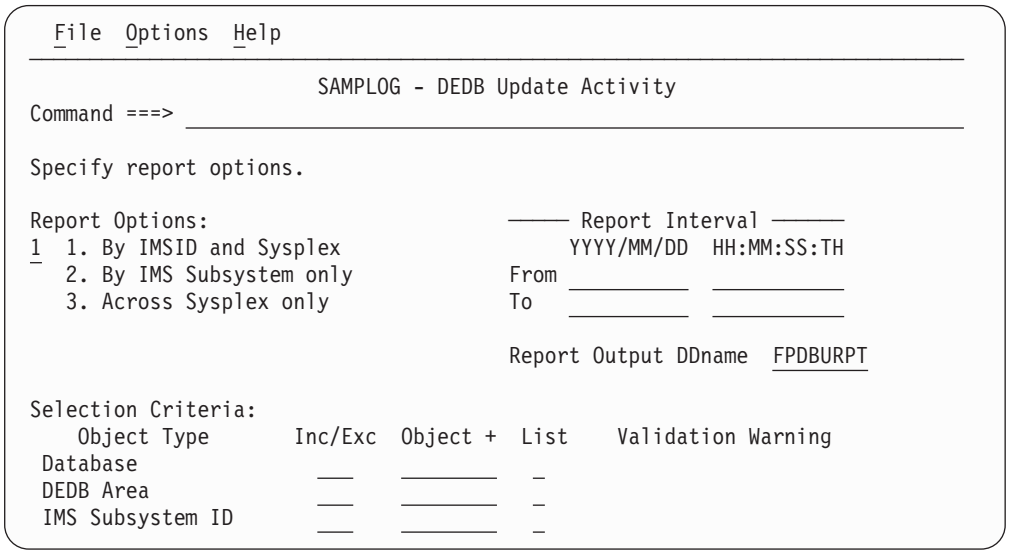


Figure 202. DEDB Update Activity Report Options

The options are as follows:

Report Options
Default: **1. By IMSID and Sysplex**

The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.

Select **1** to produce one report for each subsystem followed by a total system wide report.

Select **2** to produce only the reports for each subsystem.

Select **3** to produce only the total system wide report.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see page "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: FPDBURPT

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their DEDB Database, DEDB Area, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"FPDBUPD: DEDB Update Activity report" on page 473
The FPDBUPD operand of the IMSPALOG batch command requests the DEDB Update Activity report.

VSO Statistics report

The VSO Statistics report provides detailed statistics on VSO resource usage.

IMS PA generates the report command:

```
IMSPALOG FPVSO(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          SAMPLOG - VSO Statistics
Command ===> ____________________________________________________________

Specify report options.

Report Options:                          ──── Report Interval ────
1  1. By IMSID and Sysplex                    YYYY/MM/DD  HH:MM:SS:TH
   2. By IMS Subsystem only            From ___________  ___________
   3. Across Sysplex only              To   ___________  ___________

                                       Report Output DDname  FPVSORPT

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Database               ___    ________   _
 DEDB Area              ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 203. VSO Statistics Report Options

The options are as follows:

Report Options

Default: **1. By IMSID and Sysplex**

The selection is only relevant when processing multi-subsystem log files. In a single IMS subsystem environment all report options are equivalent.

Select **1** to produce one report for each subsystem followed by a total system wide report.

Select **2** to produce only the reports for each subsystem.

Select **3** to produce only the total system wide report representing the aggregate of all the included subsystems in the sysplex.

Report Interval

Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname

Default: `FPVSORPT`

Specify the DDname to be used for the report output.

Selection Criteria

Default: None specified; include all.

Records can be included in or excluded from the report based on their DEDB Database, DEDB Area, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single

value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Related reference:

“FPVSO: VSO Statistics report” on page 474
The FPVSO operand of the IMSPALOG batch command requests the VSO Statistics report.

ATF Enhanced Summary reports

OMEGAMON V530 introduced functionality to create an Application Trace Facility (ATF) Enhanced Summary record in the IMS log. You can run reports on this record or create an extract from it.

IMS PA can produce the following ATF Enhanced Summary extract and reports:
- Extract
- Transaction Analysis
- DLI Call Analysis
- DB2 Call Analysis
- MQ Call Analysis

ATF Enhanced Summary Transit Options

The IMS PA ATF Enhanced Summary Transit Options define control information that applies to the ATF Enhanced Summary reports within the report set.

The ATF Enhanced Summary Transit Options apply to the following reports:
- ATF Enhanced Summary Extract
- ATF Enhanced Summary Transaction Analysis
- ATF Enhanced Summary DLI Call Analysis
- ATF Enhanced Summary DB2 Call Analysis
- ATF Enhanced Summary MQ Call Analysis

```
File  Options  Help
-------------------------------------------------------------------------------
                          ATF1 - ATF ES Transit Options
Command ===> ____________________________________________________________

Specify ATF Enhanced Summary Transit options:

OMEGAMON ATF ES Log Code : A0 (Hex A0-FF)
_  Process exception transactions only
```

Figure 204. ATF Enhanced Summary Transit Options Panel

The options are as follows:

OMEGAMON ATF ES Log Code
Default: A0

The log record code of the OMEGAMON Application Trace Facility (ATF) Enhanced Summary records written to the IMS log. This code is a hexadecimal value A0-FF that uniquely identifies OMEGAMON ATF Enhanced Summary records in IMS log files.

Process exception transactions only
Default: Not selected. There is no filtering on exception records.

Select this option to process only transactions marked by ATF as matching defined exception criteria.

IBM OMEGAMON for IMS V5.5 with APAR OI54667 introduced flags to indicate transactions that matched ATF exception criteria and which were written to the exception trace streams.

If this option is selected and the ATF input is from a version earlier than APAR OI54667, no records are selected. The criteria apply to all reports in the report set.

ATF Enhanced Summary Extract

The ATF Enhanced Summary Extract creates CSV extracts of the fixed part of the ATF Enhanced Summary record and, optionally, up to six repeating sections. You can then export the extract data for analysis by external programs or PC applications.

IMS PA generates the report command:

```
IMSPALOG ATFEXTR(
        DELIMIT(','))
```

This panel provides a second level of control for extract processing. Values specified on the Log Global Options and the ATF Enhanced Summary Transit Options panels provide a primary level of control.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          ATF1 - ATF ES Extract
Command ===> _________________________________________________________________

Specify report options.

Processing Options (Transit options):   ───── Report Interval ──────
OMEGAMON ATF ES Log Code : A0                YYYY/MM/DD  HH:MM:SS:TH
Process exceptions only  :              From __________  ___________
                                        To   __________  ___________

Extract Data Sets:

   Opt Section  Extract Data Set Name                              Disp
 1. /  HEADER   'JXW.IMSPA.AA1.CSV'________________________________  OLD
 2. _  DATABASE __________________________________________________  ___
 3. _  DLI DB   __________________________________________________  ___
 4. _  DLI TM   __________________________________________________  ___
 5. _  DB2      __________________________________________________  ___
 6. _  MQ       __________________________________________________  ___
 7. _  OTHER    __________________________________________________  ___

Extract Options:
_  Include Field Labels                 Delimiter . . ,  (blank is valid)

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 Program                ___    ________   _
 Database               ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 205. Fast Path Transit Extract by Interval Options

The options are as follows:

OMEGAMON ATF ES Log Code

Read-only. The log record code of the OMEGAMON Application Trace

Facility (ATF) Enhanced Summary records written to the IMS log. This code is a hexadecimal value A0-FF that uniquely identifies OMEGAMON ATF Enhanced Summary records in IMS log files. You can set this log code in the ATF Enhanced Summary Transit Options.

Process exceptions only
Read-only. An indicator of whether IMS PA will process only transactions marked by ATF as matching defined exception criteria. You can set this option in the ATF Enhanced Summary Transit Options.

Report Interval
The time period for which you will extract records. For a record to be included in the output, it must be within not only this Report Interval, but also the Report Interval specified in the Log Global options of the report set.

Extract Data Sets
Select with a / to produce the required extract. For each option, you must also enter an output extract data set name and disposition. For disposition, specify either OLD or SHR to overwrite the data set contents with the new extract data, or specify MOD to append the new extract data.

If no selection is made, only the HEADER extract is produced.

Table 3. Extended ATF Summary Record Sections

Section	Details reported
HEADER	The start of the log record, which includes the log code, subsystem, and time stamp. It also includes: • details about the transaction: who ran it and when, and tokens to identify the unit-of-work • overall response time and resource usage performance measurements • information about what other sections to expect in the remainder of the record
DATABASE	Information about databases referenced by the transaction
DLI DB	DLI DB call types, counts, elapsed times, and CPU times
DLI TM	DLI TM call types, counts, elapsed times, and CPU times
DB2	DB2 call types, counts, elapsed times, and CPU times
MQ	MQ call types, counts, elapsed times, and CPU times
OTHER	Other counts, elapsed times, and CPU times

Include Field Labels
Default: No field labels.

Select this option to include field labels as the first record written to the extract data set to identify the columns.

Note: If you intend to import the data into a database, be aware that many databases do not recognize the first row as a header row, and would consequently treat the field labels as raw data.

Delimiter
Default: **,**

The character that is used to separate field values in the extract.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the extract based on their Transaction Code, Program (PSB), Database, User ID, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

ATF Enhanced Summary Transaction Analysis report

The ATF Enhanced Summary Transaction Analysis report shows performance by transaction or by database depending on the option you select. The report is available in both List and Summary format.

IMS PA generates the report command:

```
IMSPALOG ATFANALYSIS(...)
```

```
 File  Options  Help
 ATF2 - ATF ES Transaction Analysis
Command ===>

Specify report options.

Processing Options (Transit options):   ------ Report Interval ------
OMEGAMON ATF ES Log Code : A0                YYYY/MM/DD  HH:MM:SS:TH
Process exceptions only  :             From ___________  ___________
                                       To   ___________  ___________

Reports Required:                      Report Output DDnames:
/  List                                 List . . . . ATFTRNLS
/  Summary                              Summary  . . ATFTRNSM
_  Database

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 Program                ___    ________   _
 Database               ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 206. ATF Enhanced Summary Transaction Analysis Report Options

These reports are written to the data set defined by the **Report Output DDnames** options.

The options are:

OMEGAMON ATF ES Log Code
Read-only. The log record code of the OMEGAMON Application Trace Facility (ATF) Enhanced Summary records written to the IMS log. This code is a hexadecimal value A0-FF that uniquely identifies OMEGAMON ATF Enhanced Summary records in IMS log files. You can set this log code in the ATF Enhanced Summary Transit Options.

Process exceptions only
Read-only. An indicator of whether IMS PA will process only transactions marked by ATF as matching defined exception criteria. You can set this option in the ATF Enhanced Summary Transit Options.

Report Interval
The time period for which you will include records. For a record to be

included in the output, it must be within not only this Report Interval, but also the Report Interval specified in the Log Global options of the report set.

Reports Required

List

- When Database is not selected, transactions are listed with elapsed time and CPU time.
- When Database is selected, transactions are listed by database, with DLI Gets and Updates separated into call counts, elapsed time, and CPU time.

Summary

- When Database is not selected, transactions are summarized by program, with elapsed time and CPU time separated into different categories.
- When Database is selected, database usage is summarized showing call counts, elapsed time, and CPU time for DLI Reads and separately for DLI Updates.

Database

The Database option changes the type of List or Summary report so that it shows performance by database. If the Database option is selected without either List or Summary, no report is produced.

Report Output DDnames

Defaults: `ATFTRNLS` for List, and `ATFTRNSM` for Summary.

Specify the DDnames to be used for the report output for the List and Summary reports.

Selection Criteria

Default: None specified; include all.

Records can be included in, or excluded from, the extract based on their Transaction Code, Program (PSB), Database, User ID, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

ATF Enhanced Summary DLI Call Analysis report

The ATF Enhanced Summary DLI Call Analysis report shows database activity within transactions. The report is available in both List and Summary format.

IMS PA generates the report command:

```
IMSPALOG ATFDLICALL(...)
```

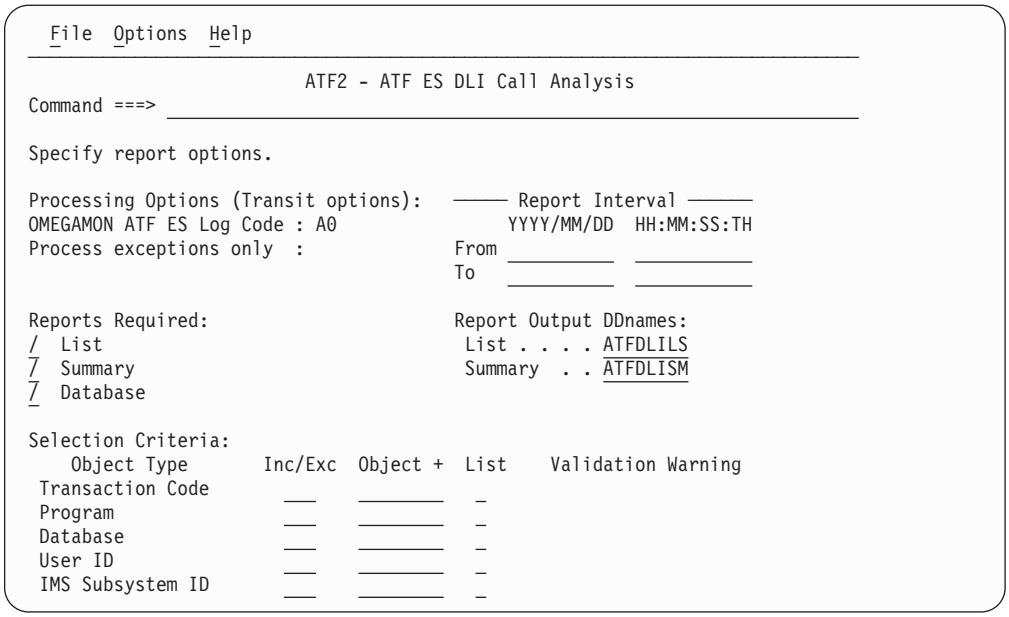


Figure 207. ATF Enhanced Summary DLI Call Analysis Report Options

These reports are written to the data set defined by the **Report Output DDnames** options.

The options are:

OMEGAMON ATF ES Log Code
Read-only. The log record code of the OMEGAMON Application Trace Facility (ATF) Enhanced Summary records written to the IMS log. This code is a hexadecimal value A0-FF that uniquely identifies OMEGAMON ATF Enhanced Summary records in IMS log files. You can set this log code in the ATF Enhanced Summary Transit Options.

Process exceptions only
Read-only. An indicator of whether IMS PA will process only transactions marked by ATF as matching defined exception criteria. You can set this option in the ATF Enhanced Summary Transit Options.

Report Interval
The time period for which you will include records. For a record to be included in the output, it must be within not only this Report Interval, but also the Report Interval specified in the Log Global options of the report set.

Reports Required

List Within each transaction, DLI activity is reported by database and call type. Whether Database is selected has no effect.

Summary

- When Database is not selected, DLI activity is summarized by transaction, with DLI call counts, average elapsed time and CPU time.
- When Database is selected, DLI activity is summarized by database, with DLI call counts, average elapsed time and CPU time.

Database
The Database option changes the type of Summary report so that it

shows DLI activity by database. If the Database option is selected without either List or Summary, no report is produced.

Report Output DDnames
Defaults: `ATFDLILS` for List, and `ATFDLISM` for Summary.

Specify the DDnames to be used for the report output for the List and Summary reports.

Selection Criteria
Default: None specified; include all.

Records can be included in, or excluded from, the extract based on their Transaction Code, Program (PSB), Database, User ID, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

ATF Enhanced Summary DB2 Call Analysis report

The ATF Enhanced Summary DB2 Call Analysis report shows DB2 SQL call activity within transactions. The report is available in both List and Summary format.

IMS PA generates the report command:

```
IMSPALOG ATFDB2CALL(...)
```

```
 File  Options  Help
──────────────────────────────────────────────────────────────────────────
                        ATF2 - ATF ES DB2 Call Analysis
Command ===> ____________________________________________________________

Specify report options.

Processing Options (Transit options):   ──── Report Interval ──────
OMEGAMON ATF ES Log Code : A0                YYYY/MM/DD  HH:MM:SS:TH
Process exceptions only  :              From __________  ___________
                                        To   __________  ___________

Reports Required:                       Report Output DDnames:
/  List                                  List . . . . ATFDB2LS
_  Summary                               Summary  . . ATFDB2SM

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 Program                ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 208. ATF Enhanced Summary DB2 Call Analysis Report Options

These reports are written to the data set defined by the **Report Output DDnames** options.

The options are:

OMEGAMON ATF ES Log Code
Read-only. The log record code of the OMEGAMON Application Trace Facility (ATF) Enhanced Summary records written to the IMS log. This code is a hexadecimal value A0-FF that uniquely identifies OMEGAMON

ATF Enhanced Summary records in IMS log files. You can set this log code in the ATF Enhanced Summary Transit Options.

Process exceptions only
Read-only. An indicator of whether IMS PA will process only transactions marked by ATF as matching defined exception criteria. You can set this option in the ATF Enhanced Summary Transit Options.

Report Interval
The time period for which you will include records. For a record to be included in the output, it must be within not only this Report Interval, but also the Report Interval specified in the Log Global options of the report set.

Reports Required

List The List report shows DB2 activity within transaction by SQL call type, including call count, elapsed time and CPU time.

Summary
The Summary report shows DB2 activity summarized by transaction and SQL call type, including call count, elapsed time, and CPU time.

Report Output DDnames
Defaults: `ATFDB2LS` for List, and `ATFDB2SM` for Summary.

Specify the DDnames to be used for the report output for the List and Summary reports.

Selection Criteria
Default: None specified; include all.

Records can be included in, or excluded from, the extract based on their Transaction Code, Program (PSB), User ID, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

ATF Enhanced Summary MQ Call Analysis report

The ATF Enhanced Summary MQ Call Analysis report shows MQ call activity within transactions. The report is available in both List and Summary format.

IMS PA generates the report command:

```
IMSPALOG ATFMQCALL(...)
```

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                          ATF2 - ATF ES MQ Call Analysis
 Command ===> _________________________________________________________________

 Specify report options.

 Processing Options (Transit options):   ───── Report Interval ─────
 OMEGAMON ATF ES Log Code : A0                YYYY/MM/DD  HH:MM:SS:TH
 Process exceptions only  :              From __________  ___________
                                         To   __________  ___________

 Reports Required:                       Report Output DDnames:
 /  List                                  List . . . . ATFMQLS
 _  Summary                               Summary  . . ATFMQSM

 Selection Criteria:
     Object Type       Inc/Exc  Object +  List    Validation Warning
  Transaction Code       ___    ________   _
  Program                ___    ________   _
  User ID                ___    ________   _
  IMS Subsystem ID       ___    ________   _
```

Figure 209. ATF Enhanced Summary MQ Call Analysis Report Options

These reports are written to the data set defined by the **Report Output DDnames** options.

The options are:

OMEGAMON ATF ES Log Code
: Read-only. The log record code of the OMEGAMON Application Trace Facility (ATF) Enhanced Summary records written to the IMS log. This code is a hexadecimal value A0-FF that uniquely identifies OMEGAMON ATF Enhanced Summary records in IMS log files. You can set this log code in the ATF Enhanced Summary Transit Options.

Process exceptions only
: Read-only. An indicator of whether IMS PA will process only transactions marked by ATF as matching defined exception criteria. You can set this option in the ATF Enhanced Summary Transit Options.

Report Interval
: The time period for which you will include records. For a record to be included in the output, it must be within not only this Report Interval, but also the Report Interval specified in the Log Global options of the report set.

Reports Required

List The List report shows MQ activity within transaction by call type, showing elapsed time and CPU time.

Summary
: The Summary report shows MQ activity summarized by transaction and call type, including call count, and average elapsed time and CPU time.

Report Output DDnames
: Defaults: `ATFMQLS` for List, and `ATFMQSM` for Summary.

Specify the DDnames to be used for the report output for the List and Summary reports.

Selection Criteria
: Default: None specified; include all.

Records can be included in, or excluded from, the extract based on their Transaction Code, Program (PSB), User ID, and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Trace reports

The options for each trace report are described here.

IMS PA can produce the following trace reports:
- DC Queue Manager Trace
- Database Trace (Full Function)
- DEDB Update Trace
- ESAF Trace

DC Queue Manager Trace report

The DC Queue Manager Trace report provides a record of all DC-related activity for the specified time period.

IMS PA generates the report command:

```
IMSPALOG DCTRACE(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                      SAMPLOG - DC Queue Manager Trace
Command ===> ____________________________________________________________

Specify report options.

Report Options:                          ──── Report Interval ─────
_  Print LTERM, not Line/Terminal             YYYY/MM/DD  HH:MM:SS:TH
_  Print complete transactions          From __________  ____________
_  Print entire message text            To   __________  ____________
_  Print Tracking UOW report
   UTC Format:                         Report Output DDname  DCTRDD
   1  1. Local  2. GMT

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Line/Terminal          ___    ________   _
 LTERM                  ___    ________   _
 VTAM Node              ___    ________   _
 Log Record Code        ___    ________   _
 Message ID             ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 210. DC Queue Manager Trace Report Options

The options are as follows:

Print LTERM, not Line/Terminal
Default: Not selected.

Select with a / to print LTERMs. If not selected, VTAM Node names or Line/Terminal values are printed. Whatever the choice, the column heading in the report is shown as LTERM.

Print complete transactions
Default: Not selected.

Select with a / to ensure that all messages associated with a transaction are reported, regardless of the filtering options in effect. For example, if you include **Message ID** TR* to only include messages for transactions that start with TR, then IMS PA also reports the output messages for these transactions, even though their Message ID does not match TR*.

Print entire message text
Default: Not selected.

Select with a / to print the entire message text. If this option is not specified then only the first part of each text segment that fits on one line is reported.

Print Tracking UOW report
Default: Not selected.

Select with a / to include the Tracking UOW for each log record in the report. This option changes the format of the report to include additional information.

UTC Format
Select the required format of the UTC time stamp for the DC UOW Tracker report:

1. **Local**. The UTC is converted from GMT to local time by applying the local time zone offset. This is the default.
2. **GMT**. The UTC is not converted to local time. The UTC is reported as it appears in the log record without the time zone offset applied.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: DCTRDD

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Log Records can be selected by Line/Terminal, LTERM, VTAM Node, Log Record Code, Message ID, User ID and IMS Subsystem ID.

For example, to include terminals 2 and 5 on line 10, specify INC and the name of a Line/Terminal Object List which contains the values 10/2 and 10/5 and enter a / in the **List** column. To include only terminal 3 on line 8, enter the value 8/3 directly on this panel and leave the **List** column blank. If more than eight characters are required to specify a line/terminal value, use an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Masking is not supported for Line/Terminal or Log Record Code objects.

Note: The Message ID is the first 8 characters in the 01 or 03 log record. When specifying a Message ID value on this panel or in an Object List, if it

is less than 8 characters append an * (asterisk). For example, specify TR1* to include or exclude all messages for transaction code TR1.

Related reference:

"DCTRACE: DC Queue Manager Trace report" on page 481
The DCTRACE operand of the IMSPALOG batch command requests the DC Queue Manager Trace report.

Database Trace report

The Database Trace report provides a record of all database changes by application programs as recorded on the IMS log. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

IMS PA generates the report command:

```
IMSPALOG DBTRACE(...)
```

```
  File  Options  Help
_____________________________________________________________________________

                  SAMPLOG - Database Trace (Full Function)
Command ===> _____________________________________________________________

Specify report options.

Report Options:                          ------ Report Interval ------
1  1. Database with transaction               YYYY/MM/DD  HH:MM:SS:TH
      oriented information                 From __________  ___________
   2. Database information only            To   __________  ___________
   3. Database Open/Close only
                                           Report Output DDname  DBTRDD

Report Option 1 Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 Database               ___    ________   _
 Program (PSB)          ___    ________   _

Report Options 1 and 2 Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Key
 Block ID               ___    ________   _
                        ___    ________   _

Report Options 1, 2 and 3 Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 IMS Subsystem ID       ___    ________   _
```

Figure 211. Database Trace Report Options

The options are as follows:

Report Options

Default: 1

Select 1 to report database information and transaction information which includes:

- Database open, close, and update operations for the specified databases.
- Inputs, program schedulings, updates, and program terminations for the programs invoked by the specified transaction codes. All opens and

closes for the specified databases are reported because they are not identified by specific transaction codes.

Select 2 to report database open, close, and update operations for all databases. Transaction-oriented information is not reported.

Select 3 to report open and close operations for all databases, but not updates. Transaction-oriented information is not reported.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `DBTRDD`

Specify a DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

For report option 1, records can be filtered by Transaction Code, Database, Program (PSB), Key, Block ID, and IMS Subsystem ID.

For report option 2, records can be filtered by Key, Block ID, and IMS Subsystem ID.

For report option 3, records can be filtered by IMS Subsystem ID only.

Key values are from 1 to 8 characters. Block ID values are 4-byte hexadecimal IDs that can be used if keys are unknown or nonexistent. The specified Block ID values are compared to the DLOGRBA field in the database type 50 log records. The specified Key or Block ID values pertain to all included databases.

This enables you to report only the information of interest. You can specify a single value, a masking pattern (except for Block ID objects), or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"DBTRACE: Database Trace report" on page 482
The DBTRACE operand of the IMSPALOG batch command requests the Database Trace (Full Function) report.

DEDB Update Trace report

The DEDB Update Trace report provides a record of all DEDB changes by application programs as recorded on the IMS log.

IMS PA generates the report command:

```
IMSPALOG FPDBTRC(...)
```

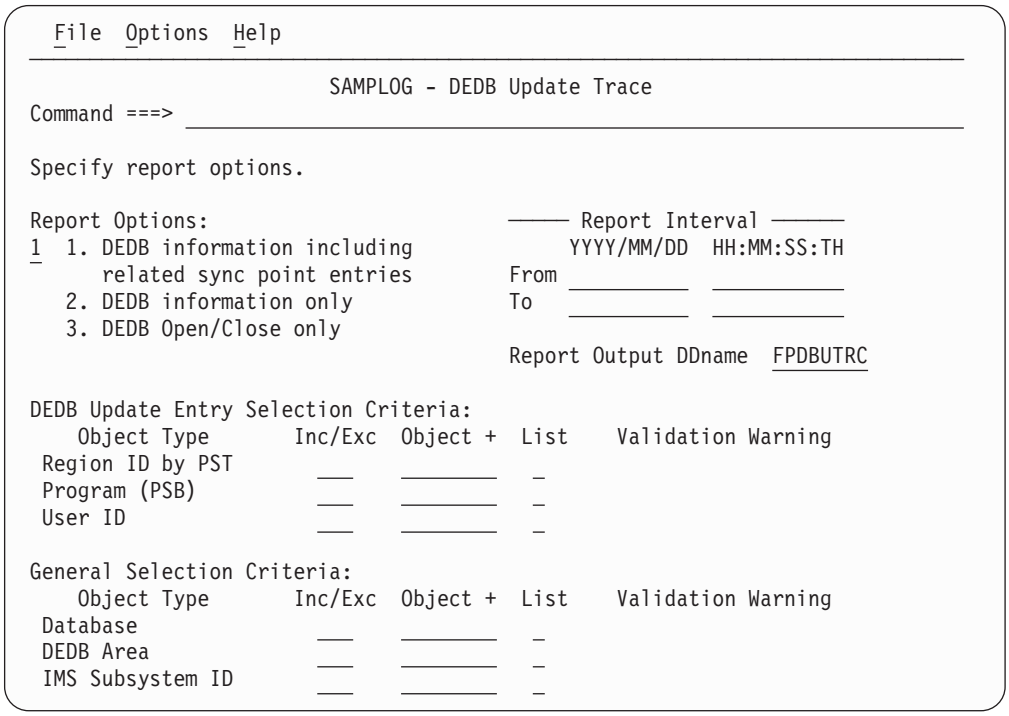


Figure 212. DEDB Update Trace Report Options

The DEDB Update Trace report can generate large amounts of output over a very short period of time. To avoid large and unwanted report output, it is recommended that you:

1. Use the From and To times to narrow the reporting period.
2. Use Object Lists to filter the databases, programs, or users included in the report.
3. Set the desired report option to include only the type of DEDB events required.

The options are as follows:

Report Options

Default: **1. DEDB information including related sync point entries**

1. DEDB information including related sync point entries includes:
- DEDB updates
- Application sync points that have some DEDB updates reported
- DEDB open and close events
- DEDB errors

2. DEDB information only includes:
- DEDB updates
- DEDB open and close events
- DEDB errors

3. DEDB Open/Close only includes:
- DEDB open and close events
- DEDB errors

Report Interval

Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see page "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: FPDBUTRC

Specify a DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

The **General** qualifiers apply to all the possible entries of the Trace. In contrast, the **DEDB Update Entry** qualifiers apply only to DEDB update entries (5950 log records), though using these filters will affect the application SYNC records included in the report.

The databases to be included in or excluded from the report can be specified by DEDB Database name and DEDB Area name. The source of the database updates can be restricted by filtering on IMS Region by PST number, Program name, User ID, and IMS Subsystem ID. Filtering by Transaction Code is not available as DEDB update records do not contain transaction name.

You can specify a single value, a masking pattern (not for Region ID by PST number), or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"FPDBTRC: DEDB Update Trace report" on page 483
The FPDBTRC operand of the IMSPALOG batch command requests the DEDB Update Trace report.

ESAF Trace report

The External Subsystem Attach Facility (ESAF) Trace report provides a chronological listing of all external subsystem connects and disconnects for the specified time period.

IMS PA generates the report command:

```
IMSPALOG ESAF(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                            SAMPLOG - ESAF Trace
Command ===> ____________________________________________________________

Specify report options.

                                      ──── Report Interval ─────
                                           YYYY/MM/DD  HH:MM:SS:TH
                                      From __________  ___________
                                      To   __________  ___________

                                      Report Output DDname  ESAFDD

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 External SSID          ___    ________   _
 IMS Subsystem ID       ___    ________   _
```

Figure 213. ESAF Trace (Log) Report Options

The options are as follows:

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: `ESAFDD`

Specify the DDname to be used for the report output.

Selection Criteria
Default: None specified; include all.

Records can be included in or excluded from the report based on their External Subsystem ID and IMS Subsystem ID values. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

User-written reports

IMS PA supports up to 21 user-written reports in each Report Set. These can be activated for execution together with other reports in the Report Set in a similar manner to the supplied log reports.

IPIPPGM2 is one such programs supplied with IMS PA. See Chapter 38, "User-written log record processors," on page 751 for information on writing a record processor.

To include a User-Written Record Processor in a Report Set, from the Log Report Set Edit panel, select **User-Written Reports** to display the User-Written Record Processors panel.

```
                User-Written Record Processors
Command ===> ____________________________________________________

Enter "/" to select action.

  1. S  IPIPU1C1         2. _  IPIPPGM2         3. _  IPIPU9C1
  4. _  MYPGM1           5. _  MYPGM2           6. _  Not Defined
  7. _  Not Defined      8. _  Not Defined      9. _  Not Defined
 10. _  Not Defined     11. _  Not Defined     12. _  Not Defined
 13. _  Not Defined     14. _  Not Defined     15. _  Not Defined
 16. _  Not Defined     17. _  Not Defined     18. _  Not Defined
 19. _  Not Defined     20. _  Not Defined     21. _  Not Defined
```

Figure 214. Activating User-Written Reports

This panel allows 21 user-defined processors to be specified and activated or deactivated. Activated processors are highlighted, and if any are activated then the **User-Written Reports** entry on the Report Set menu is also highlighted. **Not Defined** indicates that a user program name is not specified for this processor entry, and the entry cannot be activated.

Line actions:
The following line actions are provided:
/ Display the menu of line actions
A Activate the processor

D Deactivate the processor
E Edit the processor options
S Select the processor (same as Edit)

Enter **S** or **E** to select a processor to view or edit its details. The following panel is displayed.

```
                    LRS00001 - User Processor 1
Command ===> ____________________________________________________________

Specify report options.

User Program Name  IPIUP1C1             ----- Report Interval ------
                                            YYYY/MM/DD  HH:MM:SS:TH
                                       From __________  ___________
                                       To   __________  ___________

                                       Report Output DDname  IPIUP1C1

Log Records to Include:
  Object Type       Object +  List    Validation Warning
 Log Record Code    ________   _

Selection Criteria:
  Object-Label  Inc/Exc  Object +  List    Validation Warning
    TRAN        INC      DLICALLS  /
    ________    ___      ________  _
    ________    ___      ________  _
    ________    ___      ________  _
    ________    ___      ________  _

Note: The Selection Criteria objects can be of any IMS PA object type, however
       they are passed to the User Processor as type 'Object-Label' objects.
```

Figure 215. User Processor Options

This panel is used to specify the report options for a selected user-written record processor. The options are as follows:

User Program Name
Default: None.

Specify the name of the user-written program. Three programs supplied with IMS PA are IPIPU1*xx*, IPIPPGM2, and IPIPU9*xx*. Substitute *xx* with your required IMS version (C1 for IMS V12, D1 for IMS V13, E1 for IMS V14, or F1 for IMS V15). If no name is specified, the processor is automatically deactivated.

Report Interval
Default: Not specified.

Specify the reporting interval within that specified by the Global Report Interval. Standard rules apply to the date and time specification (see "Transaction Transit Analysis report" on page 305).

Report Output DDname
Default: **User Program Name** applied at run time.

Specify the DDname to be used for output from the processor.

Log Records to Include
Default: None specified; include all records.

Specify one log record code, or an Object List of type RECCD specifying many log record codes to be passed to the user program. This filtering is performed by IMS PA.

Select **List** with a / if **Object** is an Object List, otherwise it is assumed to be a value. See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

Selection Criteria

Any five selections can be specified, using any Object List types. The **Object-Label** defaults to the Object Type of the specified Object List, but can be changed to any non-blank label.

These include/exclude selections are passed to the user program to be handled by its logic; the selections are *not* performed by IMS PA.

This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"USERPGM: User-Written Record Processors" on page 485
The USERPGM operand of the IMSPALOG batch command requests that a user-written program is to be run.

"User programs" on page 749
The sample library SIPISAMP contains members with sample user programs that can run under IMS PA and associated JCL.

Extract by Interval graphing and export

For Transaction Transit (MSGQ) Extract by Interval and Fast Path (EMH) Extract by Interval data, IMS PA provides an interactive facility to graph the data, export the data for use by external program such as DB2, and download the exported data to a PC workstation.

Restriction: The facility described in this topic is *only* applicable to Extract by Interval data sets which are in proprietary format. It is *not* applicable to all other IMS PA extracts which can be directly analyzed by external programs such as DB2, or downloaded for graphing and analysis by PC tools such as Microsoft Excel.

For more information on how to create the Extract by Interval data sets, see "Transaction Transit Extract by Interval" on page 310 and "Fast Path Transit Extract by Interval" on page 361.

The design of the IMS PA graphing and export facility is shown in Figure 216 on page 392. It processes Extract by Interval data previously extracted from Log files using IMS PA. You then choose to either graph the extract data using IMS PA (and GDDM), or download the extract data to your workstation for analysis using your usual PC spreadsheet and graphing tools.

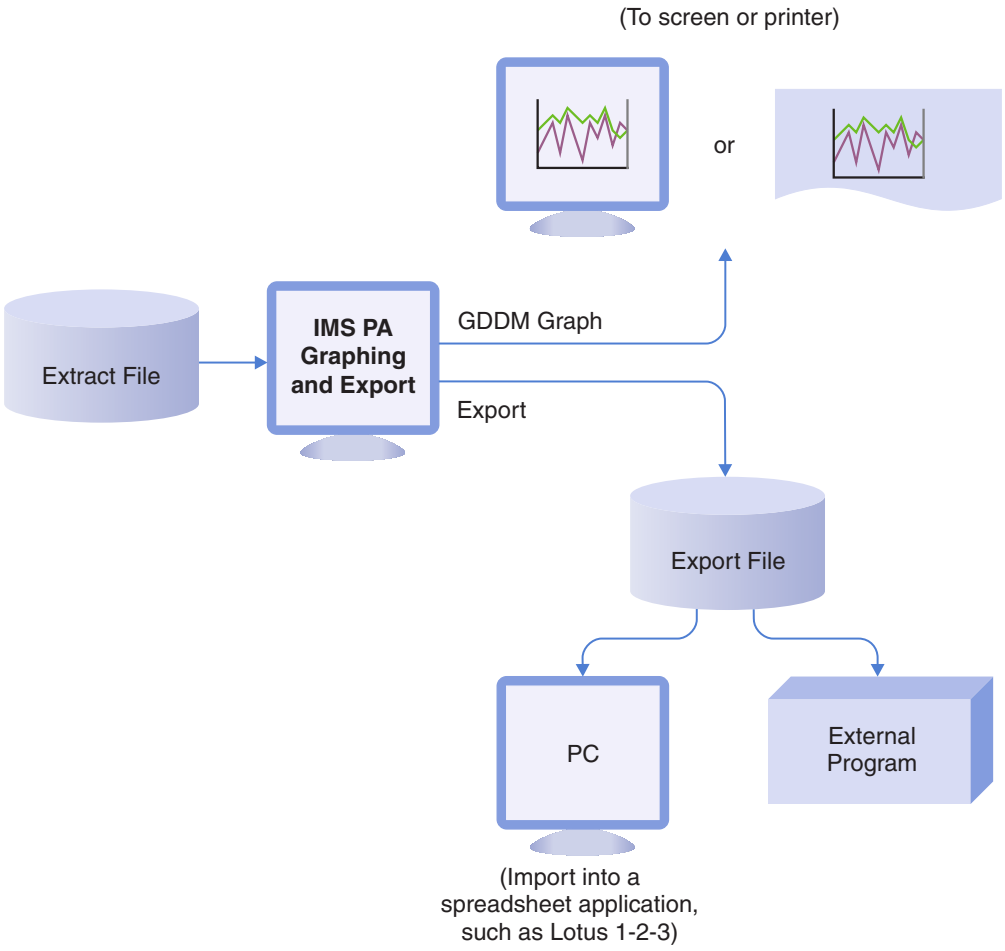


Figure 216. IMS PA Graphing and Export Facility

Extract by Interval data

The graphing and export facility operates on transit time data previously extracted from log files into Extract Data Sets.

For details of how to create the extracts, see "Transaction Transit Extract by Interval" on page 310 and "Fast Path Transit Extract by Interval" on page 361

Data is stored in the Extract Data Sets in proprietary format which is the same for message queue transactions (Transaction Transit Extract by Interval) and Fast Path transactions (Fast Path Transit Extract by Interval). However, for Fast Path transactions, the following fields are set to zero. So when graphing or exporting an Extract Data Set, the Fast Path transactions will have these fields set to zero:

- Program switch time
- Output CQS time
- Output local queue time
- CPU time

Filtering and processing options can be applied to the Extract Data Set for graphing or export:

- The peak transaction time percentage is used to calculate for each time interval, or by transaction code within each interval, the transit time (in milliseconds) within which that percentage of transactions completes.
- A date-time range can be specified to narrow the time period of the data to be graphed or exported.
- The data can be presented either accumulated by time interval or by transaction code within time interval for a specified transaction code or all, provided it has been extracted at that level of detail.

Graphing and export of interval data

To invoke the graphing and export facility, select option 8 **Graphing & Export** from the IMS PA primary option menu.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          Extract Graphing & Export
Option ===> ____________________________________________________________________

      G  Graph  - Produce graphs via GDDM from Extract by Interval data
      E  Export - Convert Extract by Interval data to external format

Extract Data Set ____________________________________________

Processing Options:
 Peak Transaction Time Percentage   90   (50-100%)

                    *** Extract Data Filtering Options ***

Data to Include:                          ── Report Interval ────
_  By Interval                                 YYYY/MM/DD  HH:MM:SS
_  By Transaction Within Interval:      From ___________  ________
   _  1. All Transactions               To   ___________  ________
   _  2. Single Transaction Code:
         ________
```

Figure 217. Extract by Interval Graphing & Export Options

The Extract Graphing and Export panel allows you to:

- Export the data for external graphing or processing (option E).
- Produce GDDM graphs from previously extracted data (option G).

You can also specify the filtering and processing options you require. On this and all subordinate panels, the filtering and processing options have defaults which apply on initial entry to the panel until changed by the user.

Note: There is no way to revert back to the defaults after you have changed the filtering and processing options.

The options are as follows:

Extract Data Set

Default: None.

Specify the name of the Extract Data Set containing the data to be graphed or exported. This data set must already have been populated with data using either or both of the Extract by Interval facilities from the Report Set (LOG) panel:

- Transaction Transit Extract by Interval
- Fast Path Transit Extract by Interval)

Peak Transaction Time Percentage
Default: 90

Specify a percentile *nnn* between 50 and 100 to report the transit time within which *nnn*% of the transactions complete. Computations assume a normal distribution. Thus, 50 gives the median transit time for the extract sample.

Specify 90 or greater to determine the response time for most transactions. This is useful, for example, when monitoring a service level agreement which states that 95% of transactions must complete within *nn* milliseconds.

Data to Include: By Interval, By Transaction Within Interval
Default: Not selected.

Select with a / to specify whether to include data for each time interval at the summary level, at the transaction level, or both.

If the transaction level is selected, enter either 1 or 2 to specify, respectively, whether to include data for all transactions or a single transaction code.

The Extract Data Set must contain data extracted according to the selected criteria; the graphing or exporting processes perform no accumulation of data, nor can they report on individual transaction codes if the data has not been extracted at the transaction level. See "Transaction Transit Extract by Interval" on page 310.

If you have selected **By Transaction Within Interval**:

- If you enter 1 for **All Transactions**, a large number of graphs may be generated because a separate graph is produced for each transaction code in the filtered extract file.
- If you enter 2 for **Single Transaction Code**, specify the transaction code to be graphed or included in the export file.

If no options are selected, processing will not proceed.

Report Interval From Date, Time To Date, Time
Defaults: None. (Include all data in the Extract Data Set)

Specify the time period for the data to be included in the graph or export file. On the graph, this becomes the boundaries for the time interval values on the x-axis.

The rules that govern the date and time values are:

Date A date is expected in a format consistent with your **Preferred Date Format** specified in the dialog settings. See Figure 12 on page 68. If the century of the year is omitted then, if the year is less than 73, century 2000 is assumed, otherwise century 1900 is assumed.

Time Time is always expressed as *hh*:*mm*:*ss* for hours, minutes, and seconds. Colon delimiters must be used to separate the parts of the time.

Date/Time Pair
The To Date/Time must not be earlier than the From Date/Time. You can specify a date value without a time value, but if a time

value is specified, a date value must also be specified. If one or more of the dates or times is omitted, the following defaults are applied at run time:

Missing Values
Default
From Date
Start of extract file
To Date
End of extract file
From Time
00:00:00
To Time
23:59:59

Extract by Interval graphing

The Extract by Interval Graphing facility uses GDDM-PGF to display or print graphs of selected transaction transit time by time interval data from an Extract Data Set, and the filtering and processing options specified on the Extract Graphing & Export panel.

The Extract Data Set contains data extracted during log Report Set processing using the Extract by Interval report facilities. You can produce up to eight line graphs, and select which data items are to appear on each graph; you may also select one or more data items to appear on all graphs.

The data item values are plotted on the y-axis against the time interval on the x-axis.

If you select a "Count" item to appear on the same graph as one or more "Transit Time" items, the graph contains two y-axes, with Transit Time (msecs) on the left and Count on the right.

If multiple graphs are requested, they are presented one per page in ascending graph-number order in the following sequence:

1. First, if **By Interval** is selected, all requested graphs with summary level data for all transactions are presented in turn.
2. Then, if **By Transaction Within Interval** is selected, all requested graphs per transaction code are presented in descending order of transaction code.

If displaying the graphs, press Enter to page forward and view them sequentially. Press **Exit** (**F3**) or **Cancel** (**F12**) at any stage if you wish to prematurely terminate the display.

To invoke this facility, select option `G` on the Extract Graphing & Export panel, specify the required filtering and processing options, then press Enter. The following panel is displayed.

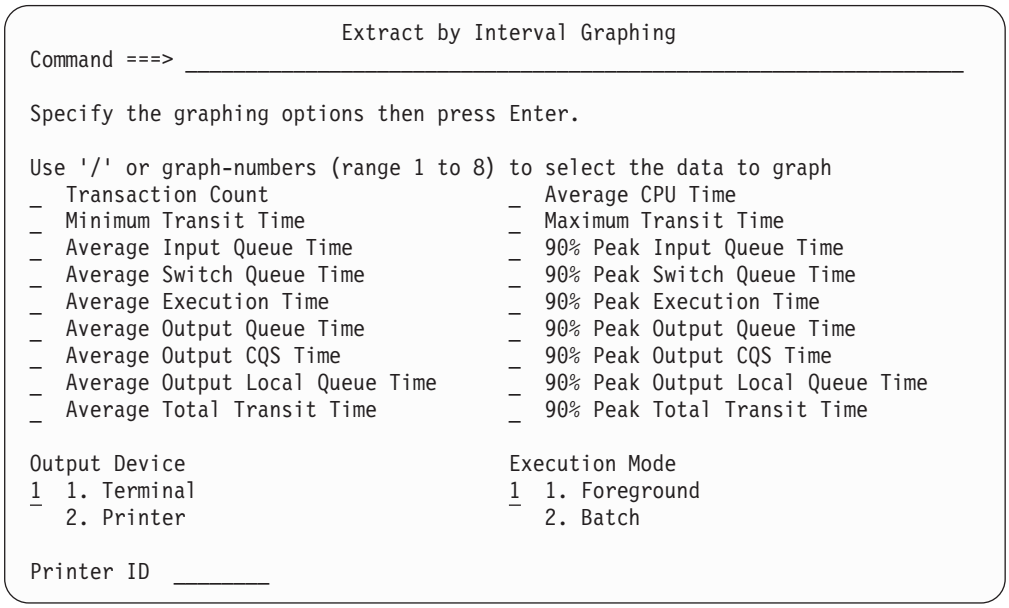


Figure 218. Extract by Interval Graphing Options

The options are as follows:

Select the Data to Graph
Default: Not selected.

If you wish to produce only one graph, use / to select those data items to appear on the graph.

If you wish to produce more than one graph:
- Use / to select the data items which you wish to appear on all graphs.
- Use numbers between 1 and 8 to select the data items to appear on up to 8 separate graphs. All data items with the same number will appear on the same graph. The number sequence dictates the order in which the graphs will appear.

If no items are selected, no graphs are produced.

nnn% is the **Peak Transaction Time Percentage** specified on the Extract Graphing & Export panel.

Output Device (Terminal or Printer)
Default: 1 (Terminal)

Select 1 to display the GDDM graphs, or 2 to print them.

Printer ID
Default: None.

If you select Output Device 2 to print the graphs, specify the ID of the printer. The ID must be a valid GDDM nickname.

Execution Mode (Foreground or Batch)
Default: 1 (Foreground)

Select 1 to generate the GDDM graphs in foreground. This is required if the selected output device is the terminal.

Select 2 for batch generation.

When all required options have been specified, press Enter to produce the requested graphs.

Extract by Interval export

The Extract by Interval Export facility makes selected transit time by time interval data available to external programs, or PC applications such as IBM Lotus Symphony Spreadsheets or Microsoft Excel.

About this task

This facility creates an external format Export Data Set from a proprietary format Extract Data Set using filtering and processing options specified on the Extract Graphing & Export panel. The Extract Data Set contains data extracted during log Report Set processing using the Extract by Interval report facilities.

Optionally, the Export file can be transferred to a PC workstation file. With this as the input file, you can then execute your PC application in the usual way to produce graphs or other analyses.

Procedure

To invoke the Export facility:

1. Activate the workstation connection.
2. On the IMS PA primary option menu, select option 8 **Graphing & Export**. The Extract Graphing & Export panel is displayed.
3. Select option `E`.
4. Specify the required filtering and processing options.
5. Press Enter.

   The following panel is displayed.

```
                          Extract by Interval Export
Command ===> ____________________________________________________________

Specify the export options then press Enter.

Destination:
_  1. Export Data Set
   2. Export Data Set and a Workstation File
   3. Workstation File from an existing Export Data Set

Export Data Set 'IMSPA.EXPORT.DATA'_____________________________

Workstation File c:\imspa\transit.txt_____________________________________

Options                                  Execution Mode
/  Headings in Export Data Set           _  1. Foreground
_  Replace Workstation File                 2. Batch
```

Figure 219. Extract by Interval Export Options

The options are as follows:

Destination

Default: None. No export or transfer occurs.

Enter 1 to convert the extract data and write it to the Export Data Set.

Enter 2 to convert the extract data and write it to the Export Data Set, then transfer this to the Workstation File.

Enter 3 to transfer previously converted data in the Export Data Set to the Workstation File.

If you request transfer to a Workstation File (option 2 or 3), look for the message `Transfer successful` at the top right of the panel when processing is complete.

Note: For a successful transfer, the ISPF workstation connection must be active. To do this, run `wsa.exe` from your workstation, then use the ISPF SETTINGS command on your terminal emulator. Select the **Workstation** option in the action bar, enter the TCP/IP address of your workstation, and accept the incoming connection. For more information on setting up `wsa.exe`, see "Export settings" on page 58.

Export Data Set
Default: None.

Specify the name of the data set which contains the external format data after filtering and converting the data from the Extract file.

The Export Data Set must be cataloged. Its DCB attributes should be compatible with the Extract Data Set, and its SPACE allocation smaller if only a subset of the data is being exported.

See Table 4 on page 399 for the record layout of the Export Data Set and Figure 220 on page 399 for an example of the contents.

Workstation File
Default: None.

Specify the path and file name of the PC file which is to receive the data transferred from the Export Data Set.

Headings in Export Data Set
Default: Not selected. Headings are not written to the Export Data Set.

Select with a / to include field headings as the first record in the Export Data Set. The headings are shown in Table 4 on page 399.

Replace Workstation File
Default: Not selected. If the workstation file exists, it is not replaced, and the transfer does not take place.

Select with a / to overwrite the workstation file if it already exists.

Execution Mode (Foreground or Batch)
Default: 1 (Foreground)

Select 1 to process in foreground. This is required if transferring data to a workstation file.

Select 2 to conduct export processing in batch mode.

Export file content:

Export files are comma-separated value (CSV) files.

The field headings are optionally included as the first record in the export file. The headings are comma-separated, in the same sequence but of different length to the data fields. Each subsequent row represents a record of type 2 containing accumulated data for the given transaction code for the given time interval.

The time shown is the start time of the interval and is included in the interval. If there is no transaction code shown, the row represents totals for the interval. The transaction data appears in alphabetical order by transaction code with *TOTAL* (the total for the interval) appearing first.

The following figure shows an example export file.

```
Type,Date,Time,Trancode,Count,Min,Avg Input,Avg Switch,Avg Pgm Exec,Avg Output,Avg Out CQS,Avg Out Loc,Avg Total,90% Input ,...
2,2018/06/25,07:51:00,*TOTAL* ,      3384,      22,     5,     0,   168,     0,     0,     0,   174,    32,     0,   261,...
2,2018/06/25,07:51:00,DSFFDE1A,         8,      94,     2,     0,   134,     0,     0,     0,   137,     4,     0,   166,...
2,2018/06/25,07:51:00,DSFFDE1B,        10,     134,     5,     0,   154,     0,     0,     0,   159,    15,     0,   176,...
2,2018/06/25,07:51:00,DSFFDE1C,         7,     125,     2,     0,   142,     0,     0,     0,   145,     3,     0,   160,...
2,2018/06/25,07:51:00,DSFFDE1D,         9,     105,     2,     0,   144,     0,     0,     0,   147,     4,     0,   175,...
2,2018/06/25,07:51:00,DSFFDE1E,         7,     122,     4,     0,   146,     0,     0,     0,   150,     9,     0,   172,...
2,2018/06/25,07:51:00,DSFFDE1F,         4,     149,    90,     0,   197,     0,     0,     0,   288,   312,     0,   277,...
2,2018/06/25,07:51:00,DSFFDE1G,         8,     128,     2,     0,   160,     0,     0,     0,   162,     3,     0,   197,...
2,2018/06/25,07:51:00,DSFFDE1H,        12,      93,     3,     0,   132,     0,     0,     0,   135,     4,     0,   162,...
2,2018/06/25,07:51:00,DSFFDE1I,         7,     112,     3,     0,   144,     0,     0,     0,   147,     7,     0,   170,...
2,2018/06/25,07:51:00,DSFFDE1J,         9,     115,     3,     0,   147,     0,     0,     0,   150,     4,     0,   185,...
2,2018/06/25,07:51:00,DSFFDE1K,         4,     115,     3,     0,   146,     0,     0,     0,   149,     4,     0,   189,...
2,2018/06/25,07:51:00,DSFFDE1L,        13,     130,     3,     0,   161,     0,     0,     0,   164,     5,     0,   203,...
⋮
2,2018/06/25,07:51:00,DSFFSC6M,        18,      48,     7,     0,    78,     0,     0,     0,    85,    26,     0,   107,...
2,2018/06/25,07:51:00,DSFFSC6N,        20,      48,    14,     0,    71,     0,     0,     0,    86,    82,     0,   100,...
2,2018/06/25,07:51:00,DSFFSC6O,        17,      50,     6,     0,    71,     0,     0,     0,    77,    25,     0,    99,...
2,2018/06/25,07:51:00,DSFFSC6P,        14,      49,     3,     0,    73,     0,     0,     0,    76,     4,     0,    89,...
2,2018/06/25,07:52:00,*TOTAL* ,      3878,      23,     2,     0,   163,     0,     0,     0,   166,     6,     0,   254,...
2,2018/06/25,07:52:00,DSFFDE1A,        13,      92,     2,     0,   130,     0,     0,     0,   133,     4,     0,   156,...
2,2018/06/25,07:52:00,DSFFDE1B,         8,     132,     2,     0,   141,     0,     0,     0,   143,     3,     0,   150,...
2,2018/06/25,07:52:00,DSFFDE1C,         7,     111,     1,     0,   137,     0,     0,     0,   139,     3,     0,   160,...
2,2018/06/25,07:52:00,DSFFDE1D,         9,     105,     3,     0,   133,     0,     0,     0,   137,     4,     0,   153,...
2,2018/06/25,07:52:00,DSFFDE1E,         7,     128,     3,     0,   148,     0,     0,     0,   152,     4,     0,   164,...
2,2018/06/25,07:52:00,DSFFDE1F,        14,     123,     3,     0,   144,     0,     0,     0,   147,     4,     0,   169,...
⋮
```

Figure 220. Export File Contents: Transit Extract by Interval

The data fields are fixed length, comma separated values. Character fields are left-justified and blank-filled to the right. Numeric fields are right-justified and blank-filled to the left.

The following table describes the record format of the export file.

Table 4. Export file record layout: Transit Extract by Interval

Field description	Column heading	Field length (Bytes)
Record Type (= 2)	Type	1
Date (User-defined format) **Sort** *yyyy/mm/dd* **U.S.** *mm/dd/yyyy* **European** *dd/mm/yyyy* **Ordinal** *yyyyddd* **Batch** *ddMMMyyyy* Where *MMM* = Jan, Feb, ...	Date	10
Time (hh:mm:ss)	Time	8
Transaction Code or *TOTAL*	Trancode	8
Transaction count	Count	10
Minimum Transit time (msec)	Min	8
Input Queue time *(msec)*	Avg Input	6

Table 4. Export file record layout: Transit Extract by Interval (continued)

Field description	Column heading	Field length (Bytes)
Program Switch time *(msec)*	Avg Switch	6
Program Execution time *(msec)*	Avg Pgm Exec	6
Output Queue time *(msec)*	Avg Output	6
Output CQS time *(msec)*	Avg Out CQS	6
Output Local Queue time *(msec)*	Avg Out Loc	6
Total Transit time *(msec)*	Avg Total	6
Input Queue time *User-defined percentage (msec)*	*nnn*% Input	6
Program Switch time *User-defined percentage (msec)*	*nnn*% Switch	6
Program Execution time *User-defined percentage (msec)*	*nnn*% Pgm Exec	6
Output Queue time *User-defined percentage (msec)*	*nnn*% Output	6
Output CQS time *User-defined percentage (msec)*	*nnn*% Out CQS	6
Output Local Queue time *User-defined percentage (msec)*	*nnn*% Out Loc	6
Total Transit time *User-defined percentage (msec)*	*nnn*% Total	6
Maximum Transit time *(msec)*	Max	8
CPU Time *(msec)*	CPU	8

Extract export report:

The Extract Export Report panel provides a summary report of your requested export processing when executing in foreground. If executing in batch mode, a similar report is produced and is written to SYSPRINT.

You can use the report to indicate whether the results of the export are as expected, prior to proceeding with further processing of the export data. For example, if the number of records written to the Export Data Set is unreasonably large, you may choose to return to previous panels to change the filters and processing options to reduce the amount of data selected for export. The number of export records written does not include the record containing the headings.

Extract Start and **Extract End** show the period of the data in the Extract file. **Export Start** and **Export End** show the period of the data in the Export file specified using the **From** and **To** date and time option on the Extract Export panel. Compare these periods to verify that you are exporting the required portion of the extract data.

```
                    Extract Export Report
Command ===> ____________________________________________________

Extract DSN:   IMSPA.EXTRACT.DATA
Extract Start: 2018/04/13 07:51:00
Extract End:   2018/04/13 07:56:00
Extract Records read:    1250

Export DSN:    IMSPA.EXPORT.DATA
Export Start:  2018/04/13 07:51:00
Export End:    2018/04/13 07:53:00
Export Records written:      26

IPI0139I  Export request completed successfully, RC=0
```

Figure 221. Extract Export Report

Note: If you requested transfer to a Workstation File, this panel does *not* indicate its success; check for the message `Transfer successful` on return to the Extract Export panel.

Graphing the export data:

The Export data can be processed by external programs such as DB2, or transferred to a Workstation file and graphed using your familiar PC tools. You can produce graphs like the following example, which is a line graph of transit time (msecs) by time of day and shows Avg Input, Avg Out CQS, Avg Total and Count.

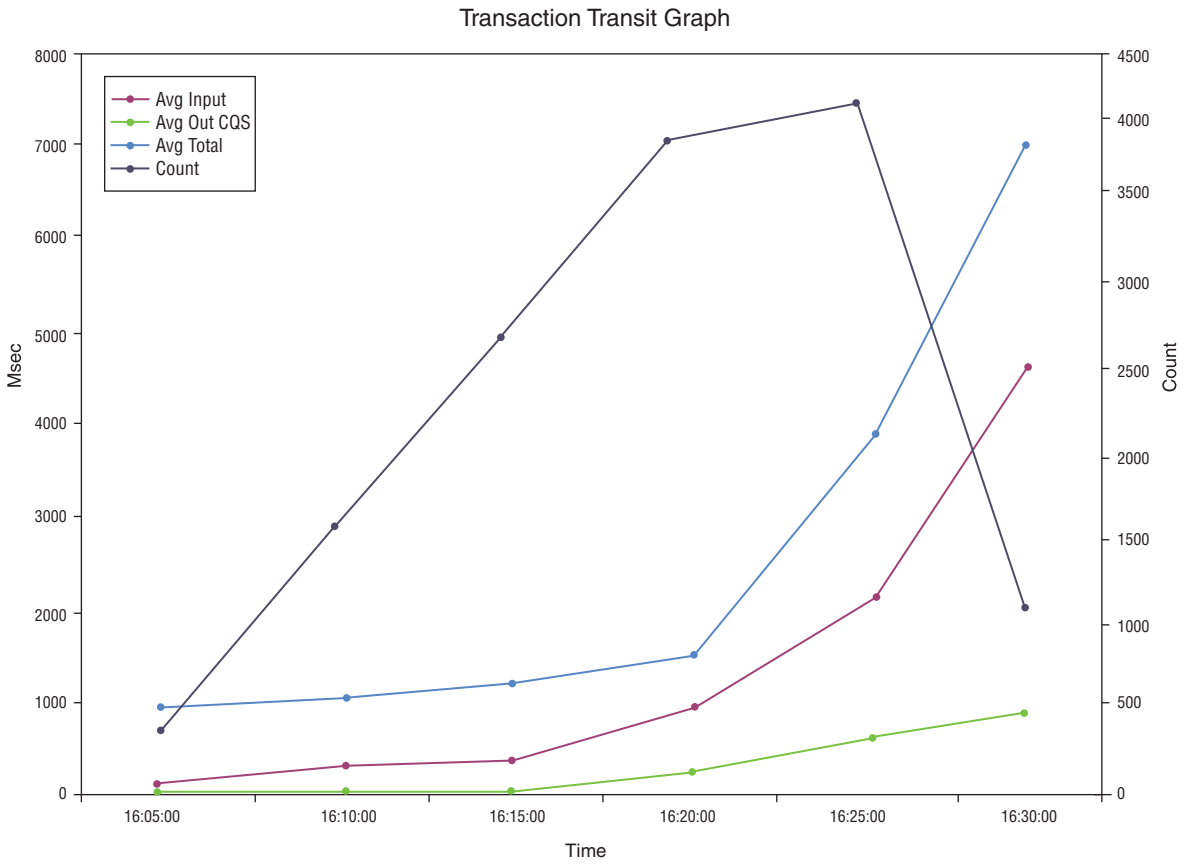


Figure 222. Using PC Tools to graph Transit Extract by Interval Export data

For details on how to produce these graphs using IBM Lotus Symphony Spreadsheets or Microsoft Excel, see "Graphing using PC tools" on page 404.

Graphing and Export JCL

The Graphing and Export JCL facility allows you to customize the job statement used in batch graphing or export jobs, and gives you the option to view or edit the generated JCL prior to submission.

The following panel is displayed if you select option 2 **Batch Execution Mode** on either the Extract Graphing or Extract Export panels.

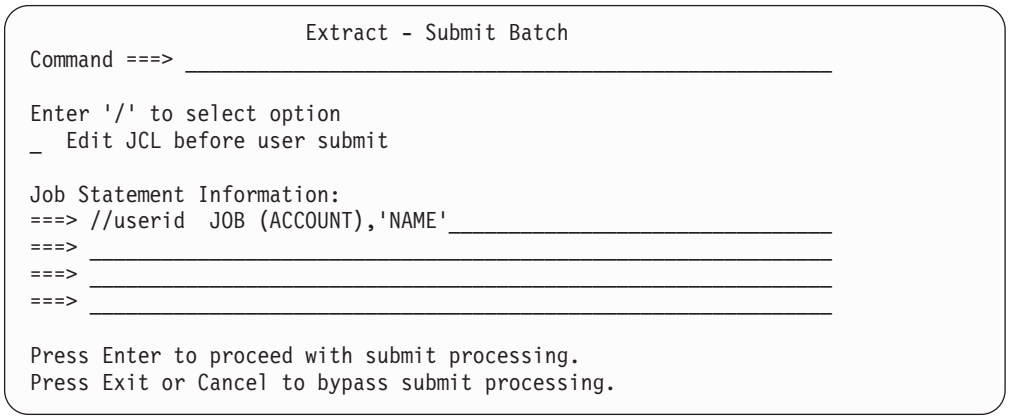


Figure 223. Extract – Submit Batch Options

The options are as follows:

Edit JCL before user submit
Default: Not selected.

Select with a / to view or edit the JCL prior to submitting the job. The JCL will display using the standard ISPF Edit facility. You may modify the JCL as required. To submit the job, enter SUB on the command line of the ISPF Edit panel.

If not selected, IMS PA will automatically submit the job.

Job Statement Information
Initial Setting: `//`*`userid`* `JOB (ACCOUNT),'NAME'` from the **Log/List - JCL** option in the action bar of the ISPF Settings panel invoked via the SETTINGS command.

Specify the JOB card to be used by the IMS PA dialog when building the JCL for executing the batch job for GDDM graphing or export processing. Multiple cards can be provided and are taken as is. Embedded or trailing null cards are ignored.

If the specified job card is invalid, TSO Submit processing generates a substitute.

IMS PA generates the JCL to execute the program IPIXTPCD. The graphing and export options specified using the dialog are passed as parameters to IPIXTPCD, together with the following where applicable:

JOB **Job Statement Information** on the Extract - Submit Batch panel shown in Figure 223.

STEPLIB DD
IMS PA Load Library and **GDDM-PGF Load Library** from IMS PA Settings in your Profile Options.

IPIXTRTI DD
Extract Data Set specified in dialog option 8 **Graphing & Export**. It was initially created as the **Output Extract Data Set** on the Transaction Transit Extract by Interval panel in the Log Report Set.

IPIXPORT DD
Export Data Set specified on the Extract by Interval Export panel (Graphing and Export option `E`).

Graphing using PC tools

To create graphs for any extracts other than Extract by Interval, you need to first transfer the extract to a workstation file. All of these extracts are in standard format suitable for direct import into PC applications. After transfer to a workstation file, the extract is then available for import into your familiar PC spreadsheet applications.

About this task

To download an extract, use your usual method, such as FTP or via your terminal emulator. Then use your preferred PC tool to graph the data.

Procedure

To graph Extract by Interval Data using Microsoft Excel:

1. Select option 3 **Report Sets** from the IMS PA primary option menu.
2. Enter line action **S** next to the SAMPLOG Report Set.
3. Enter line action **S** next to **Extract by Interval** in the **Transaction Transit Reports** category.

```
             SAMPLOG - Transaction Transit Extract by Interval
Command ===> ____________________________________________________________

Specify extract options.

Extract Data Required:                  ----- Report Interval ------
_  By Transaction Within Interval            YYYY/MM/DD  HH:MM:SS:TH
/  By Interval                          From __________  ___________
                                        To   __________  ___________

Extract Data Sets:
 Input  ____________________________________________
 Output 'IMSPA.EXTRACT'_____________________________

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _

Note: The extract time interval, set in Transit Options, is 15 minutes
      and is aligned to even hours.
```

Figure 224. Extract by Interval

4. Enter the name for the output data set. For example, `'IMSPA.EXTRACT'`. We will later refer to this data set when we build our graph.

   Note: If the data set has not already been cataloged, IMS PA will automatically catalog it for you.
5. Run the report and submit the JCL, then press **Exit** (**F3**) until you have returned to the IMS PA primary option menu.

   We will now export the extract to a plain text file on our PC.
6. Ensure that your workstation connection is activated:
   a. From your PC, run `wsa.exe`.
   b. On the command line of your terminal emulator, enter SETTINGS.

c. Place your cursor on the Workstation menu item on the toolbar, and select option 1 **Initiate Workstation Connection**.

```
---------------------------- ISPF Settings ---------------------------
                    Initiate Workstation Connection
Command ===> ____________________________________________________________
                                                              More:     +
/  Save values in system profile?  (/=Yes)

Workstation Connection                    GUI Network Protocol
2  1. With GUI display                    1  1. TCP/IP
   2. Without GUI display                    2. APPC
                                             3. Use ISPDTPRF file

GUI Title
_____________________________________________________________________
TCP/IP Address
_____________________________________________________________________
APPC Address
_____________________________________________________________________

Host Codepage  . . . ____     Host Character Set . . . ____
```

Figure 225. Initiate Workstation Connection

d. Select TCP/IP as your network protocol, enter the TCP/IP address of your workstation and press Enter to request a connection. A GUI dialog box is displayed.

e. Select **Yes** to accept the incoming connection.

f. On your terminal emulator, press **Cancel** (**F12**) to return to the IMS PA dialog.

7. Select option 8 **Graphing & Export** from the IMS PA primary option menu.

```
                          Extract Graphing & Export
Option ===> E_____________________________________________________________

      G  Graph  - Produce graphs via GDDM from Extract by Interval data
      E  Export - Convert Extract by Interval data to external format

Extract Data Set 'IMSPA.EXTRACT'_____________________________

Processing Options:
 Peak Transaction Time Percentage   75_   (50-100%)

                   *** Extract Data Filtering Options ***

Data to Include:                        --- Report Interval -----
/  By Interval                               YYYY/MM/DD  HH:MM:SS
_  By Transaction Within Interval:      From __________  ________
   _  1. All Transactions               To   __________  ________
      2. Single Transaction Code:
         ________
```

Figure 226. Extract Graphing and Export

8. Select option E to convert the Extract by Interval data to an external format.
9. Enter the name of the extract data set you created in step 4 on page 404 and press Enter. The Extract by Interval Export panel is displayed.

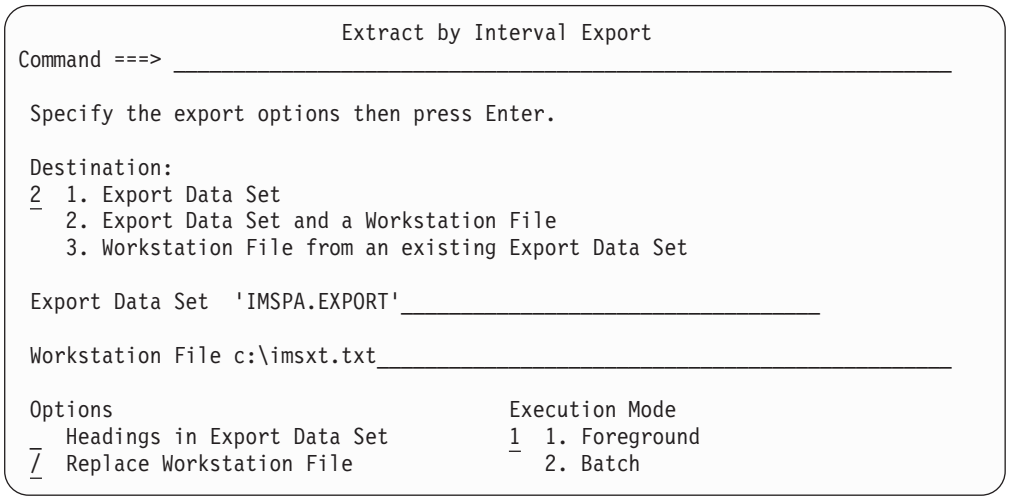


Figure 227. Extract by Interval Export

10. Specify your destination option as 2. This will export the extract data into a plain text file on your PC.
11. Specify an Export data set. For example, `'IMSPA.EXPORT'`. This data set stores your converted extract data and must be cataloged. For more information on cataloging the Export Data Set, see "Extract by Interval export" on page 397.
12. Specify the full path name of the destination file. Usually, this will be a plain text file. For example, `c:\imsxt.txt`. If the file does not exist on your workstation, IMS PA will create it. If the file already exists, select the **Replace Workstation File** option, otherwise a file will not be created on your workstation.
13. Press Enter to transfer the extract data to your workstation file. An Extract Export Report is displayed.
14. Press Enter again to return to the Extract by Interval Export panel. A `Transfer successful` message is displayed in the top right hand corner of the dialog. For an example of export data, see Figure 220 on page 399.
15. Press **Exit** (**F3**) and return to the IMS PA primary option menu.

    To graph this export data in Microsoft Excel, use the following steps.
16. Start Microsoft Excel.
17. Select **File** > **Open** from the menu bar.
18. Locate the workstation file containing the exported data and open it. The Text Import Wizard is displayed.
19. Select **Delimited** as the file type that best describes the data and click **Next**.
20. Select **Comma** as the delimiter and click **Next**.
21. Select **General** as the column data format and click Finish. The data spreadsheet displays.
22. When the data spreadsheet is displayed, hold down the Ctrl key and click the column headers to highlight the columns of data you wish to graph. For example, click **Time**, **Count**, and **CPU**.
23. Select **Insert** > **Chart** from the menu bar to open the Chart Wizard.
24. Step through the Wizard to select the required type and format for your graph.

Log Information report

The Log Information report provides a breakdown of the log record types in the input IMS log files. It shows record count, length, rates per second, and volume. Selected record types are broken down further to provide additional information about transaction arrival and processing throughput.

A Log Information report is produced automatically whenever an IMS PA Log report set is run. In this case, no additional batch commands are required. The ddname for the Log Information report is LOGINFO. Users can also generate a stand-alone Log Information report without running a report set using the appropriate batch command (see "Log Information report" on page 487).

```
V4R4M0                                IMS Performance Analyzer - Log Information

Log data From 2014-12-06 11:11:19.457342   To 2014-12-06 11:12:27.736114       Duration       1:08.278772

          ---------------------------------------  In ---------------------------------------
Code             Count        MCNT     Recs/Sec  Avg len  Max Len    Byte/Sec       MB      %
01 IN            6,025                       88      719    2,170      63,719      4.3    2.3  IMS Message
 INPUT           6,025                       88      719    2,170      63,719      4.3    2.3   Input message
03 IN            1,412                       20      634      799      13,179      0.8    0.5  IMS Message
 INPUT           1,412                       20      634      799      13,179      0.8    0.5   Input msg (program switch)
03 OUT          11,506                      169      627    1,734     106,230      7.2    3.8  IMS Message
 OUTPUT          6,899                      101      713    1,734      72,408      4.9    2.6   Output message
 MSG SWI         4,607                       67      499      582      33,821      2.2    1.2   Message switch
07               3,588       7,405           52      456      456      24,060      1.6    0.9  Program schedule end
 MPP             3,528       6,919           51      456      456      23,658      1.6    0.8   MPP
 QUICK              45         450            0      456      456         301      0.0    0.0   MPP quick reschedule
 ABEND              15          36            0      456      456         100      0.0    0.0   Abended transaction
08               3,590                       52      156      156       8,235      0.5    0.3  Program schedule start
 MPP             3,545                       52      156      156       8,132      0.5    0.3   MPP
 QUICK              45                        0      156      156         103      0.0    0.0   MPP quick reschedule
11               1,078                       15       68       68       1,078      0.0    0.0  Start of conversation
12               1,064                       15       48       48         751      0.0    0.0  End of conversation
16                 707                       10       80       80         831      0.0    0.0  Sign On/Off
⋮
```

Figure 228. Example of Log Information report content

Related reference:

"LOGINFO: Log Information report" on page 487
The Log Information report provides a breakdown of the log record types in the input IMS log files. The LOGINFO operand allows users to produce a stand-alone Log Information report without running a report set. This is a batch-only command and is not generated by an IMS PA dialog.

Chapter 21. Log batch interface

The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for Log report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

Related tasks:

"Run Log Report Set" on page 291
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.

Log Report Set JCL

The JCL built by IMS PA for the batch execution of a Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPILOGJC for a Log Report Set.

IMS PA builds the JCL to execute the program IPIMAIN using the following options specified using the dialog:

JOB **Job Statement Information** in IMS PA Settings.

IPI EXEC IPIMAIN,PARM='*parameter list***'**
IMS PA main program with parameters:

V*nnn* for Log Report Sets where *nnn* is the IMS version (VRM) of the IMS subsystem logs that you are reporting on. If it is a Group that contains IMS systems at different release levels, the systems are listed with their corresponding VRM in the IPIOPTS DD statement. If the PARM= statement (or IPIOPTS specification for a multi-release level group) does not match the IMS version of the logs, the job may fail with message "IPI0024E" on page 684.

UPPER
if **Reports in Upper Case** is YES in IMS PA Settings.

STEPLIB DD
IMS PA Load Library and optionally **User Program Load Library** In IMS PA Settings in your Profile Options.

L*xxxxunn* **DD**
Log Data Set Name (DSN) From System Definitions.

Each log input data set has its own ddname in the format L*xxxxunn* where:

L is a constant to identify it as a log input data set.
xxxx is the IMSID for the IMS Subsystem.
u defines the UNIT affinity; 0 for no affinity (for DASD) and 1–9, A–Z for affinity (for tape to be copied to DASD). This accommodates the situation in which the number of log input data sets on tape or cartridge exceeds the **Maximum Tape Units Available for Shared Queue Merge** specified on the Shared Queue Settings panel. DDnames with non-zero unit affinity are eligible for pre-merge copy processing (see "Shared Queue merge processing" on page 415).
nn is a sequence number 01–99, A0–ZZ (1035 in total) corresponding to the order in which the Log Files are specified for the IMS Subsystem, and to uniquely identify the data sets.

IPIRSET DD
For *DSN*(*member*) where:
DSN **Report Sets Data Set** in your IMS PA Profile.
member Name of the **Report Set** being run.

IPIOBJL DD
Object Lists Data Set in your IMS PA Profile.

IPIDIST DD
Distributions Data Set in your IMS PA Profile.

IPIFORM DD
Report Forms Data Set in your IMS PA Profile.

IPIOPTS DD *
Report Interval This overrides the Report Set Global Report Interval within the IPIRSET or IPICMD DD statements.

It is the report period specified on the Run Report Set panel at run time. To display the runtime options, you can issue the RUN command for a Report, Report Category, or Report Set.

IPIAVGQ DD
Transaction Averages Input Data Set From the Averages Data Sets Specification for the Management Exception log report.

IPIAVGO DD
Transaction Averages Output Data Set From the Averages Data Sets Specification for the Management Exception log report.

If the data set does not exist, IMS PA uses the **Averages Data Set Allocation Details** in Reporting Allocation Settings.

IPIEXPQ DD
Expectation Sets Data Set in your IMS PA Profile.

IPISMQW*u* DD
A shared queue merge work file where *u* defines the unit affinity. One data set is required for each tape device that is used during the shared queue copy/merge process.

IPIXTRTI DD
Transit Extract by Interval Input Data Set

IPIXTRTO DD
Transit Extract by Interval Output Data Set From the Transaction (MSGQ) Transit Extract by Interval.

If the output data set does not exist, IMS PA uses the **Transit Extract by Interval** allocation details in Reporting Allocation Settings.

IPIFPXTI DD
FP Transit Extract by Interval Input Data Set

IPIFPXTO DD
FP Transit Extract by Interval Output Data Set From the Fast Path Transit Extract by Interval.

If the output data set does not exist, IMS PA uses the **Transit Extract by Interval** allocation details in Reporting Allocation Settings.

IPITHIST DD
Transaction History File data set From the Transaction History File.

If the output data set does not exist, IMS PA uses the **Transit Extract by Interval** allocation details in Reporting Allocation Settings.

IPITXUT1 DD
Transaction (MSGQ) Transit Total Traffic Extract Data Set

IPITXUT2 DD
Transaction (MSGQ) Transit Exception Traffic Extract Data Set From the Transaction (MSGQ) Transit Transaction Exception report.

If the output data sets do not exist, IMS PA uses the **Transit Total Traffic** and **Transit Exception Traffic** allocation details in Reporting Allocation Settings. IMS PA may set or adjust the DCB attributes at Extract run time.

IPIFXUT1 DD
FP Transaction Transit Total Traffic Extract Data Set

IPIFXUT2 DD
FP Transaction Transit Exception Traffic Extract Data Set From the Fast Path Transit Transaction Exception report.

If the output data sets do not exist, IMS PA uses the **Transit Total Traffic** and **Transit Exception Traffic** allocation details in Reporting Allocation Settings. IMS PA may set or adjust the DCB attributes at Extract run time.

CPURXTRO DD
CPU Usage Extract Data Set From the CPU Usage report.

If the output data set does not exist, IMS PA uses the **Summary Extracts** allocation details in Reporting Allocation Settings.

DBUAXTRO DD
Database Update Activity Extract Data Set From the Database Update Activity report.

If the output data set does not exist, IMS PA uses the **Summary Extracts** allocation details in Reporting Allocation Settings.

Sample JCL: Log Report Set

```
//IMSPA JOB CLASS=A,REGION=0M
//*
//IPI      EXEC PGM=IPIMAIN,PARM='V151'
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Input data sets
//LIMSA001 DD  DSN=IMS.V151.LOG99,DISP=SHR
//*  Sysout data sets
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  Report Set member
//IPIRSET  DD  DSN=PREFIX.IMSPA.RSET(LOG01),DISP=SHR
//*  Object Lists data set
//IPIOBJL  DD  DSN=PREFIX.IMSPA.OBJL,DISP=SHR
//*  Distributions data set
//IPIDIST  DD  DSN=PREFIX.IMSPA.DIST,DISP=SHR
//*  Report Forms data set
//IPIFORM  DD  DSN=PREFIX.IMSPA.FORM,DISP=SHR
//*  Expectation Sets data set
//IPIEXPQ  DD  DSN=PREFIX.IMSPA.EXPSET,DISP=SHR
```

Figure 229. Sample JCL: Log Report Set

Related reference:

"Report Set JCL" on page 741
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Log JCL with command input

To generate JCL that contains commands in-stream, rather than referring to data sets, enter the dialog command JCLCMD, or its abbreviation, JCM; or, equivalently, enter RUN, and then specify the execution mode **Edit JCL with command input**.

By contrast, to generate JCL that builds commands at runtime from data sets, rather than containing commands in-stream, enter the dialog command JCL (or a RUN command that does not specify **Edit JCL with command input**). For details, see "Log Report Set JCL" on page 409.

The JCL generated by the JCLCMD command differs in the following ways from the JCL generated by the JCL command:

- The `IPICMD` DD statement contains the series of user-modifiable commands built from the activated reports in the Report Set. A description of the Report Set appears as comments (`*` in column 1) preceding the commands. It replaces the `IPIRSET` DD statement.
- The command input stream contains INCL/EXCLcommand parameters built from the Object Lists used by the Report Set. They replace the `IPIOBJL` DD statement.
- The command input stream contains DISTRIBUTION command parameters built from the Distributions used by the Report Set. They replace the `IPIDIST` DD statement.
- The command input stream contains FIELDS command parameters built from the Report Forms used by Form-based reports and extracts in the Report Set. They replace the `IPIFORM` DD statement.
- The IMSPALOG command identifies the log reports.

This facility allows you to build report JCL with command input once and store it into an external library for submitting at any time, independent of the original Report Set. Individual report options, such as Date/Time report intervals or object selection filters (such as Transaction Code, Program, Database) can then be modified in the JCL and submitted without making changes to the original Report Set.

Sample JCL with command input: Log Report Set

```
//IMSPA JOB (ACCOUNT),"NAME"
//*
//* IMS PA Report Set SAMPLOG - Sample Log Report Set
//*
//IPI      EXEC PGM=IPIMAIN,PARM='V151'
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Input Data Sets
//LIMSA001 DD  DSN=IMS.V151.IMSA.LOG01,DISP=SHR
//*  Report run-time options
//IPIOPTS  DD  *
* Reporting Time Range
 IMSPALOG START(-1,10:00:00:00),STOP(-1,11:00:00:00)
/*
//*  Sysout data set
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  Report Set Command Input
//IPICMD   DD  *
* IMS PA Log Report
* Report Set Name - SAMPLOG
* Description - Sample Log Report Set
* Log Report Global Options
*   Log Input - LOGIN
*   Report Output - RPTOUT
*   Print Lines per Page - 60
*   When Reports are Written - STOP
*   Source of IMS Processing ID - DDNAME
          IMSPALOG     INPUTDD(LOGIN),
                       OUTPUTDD(RPTOUT),
                       PAGESIZE(60),
                       PRINTAT(STOP),
                       SETIMSID(DDNAME)
* Transaction Transit Time Report Control Options
*   Max Input Queue Time - 0
*   Max Output Queue Time - 0
*   Percent of Peak Transaction Time - 90
*   Transaction Set Size - 32767
*   Time Report Interval (mins) - 15
*   Time interval is aligned to even hour
*   Include BMP Transactions
*   Include MSC Transactions
*   Include APPC/OTMA Transactions
          IMSPALOG     INMAX(0),
                       OUTMAX(0),
                       PEAK(90),
                       TSETSIZE(32767),
                       INTERVAL(15),
                       ALIGN,
                       QUALIFY(INCL(BMP),
                       INCL(MSC),
                       INCL(APPC))
* Transit Time Analysis Report
*   Reports Selected:
*     Trancode
          IMSPALOG     ANALYSIS(
                       TRANCODE)
* Transaction Exception Report
*   Reports Selected:
*     Transaction Code
*     Standard Format
*   Report Output File - TRANEXC
*   Total Traffic DSN - Not Specified
*   Exception Traffic DSN - Not Specified
          IMSPALOG     TRANEXC(
                       TRANCODE,
                       FORMAT1,
                       DDNAME(TRANEXC))
```

Figure 230. JCL with command input: Log Report Set SAMPLOG (1 of 3)

```
* Dashboard Report
*   Report Output File - DASH
          IMSPALOG     DASHBOARD(
                       DDNAME(DASH))
* Management Exception Report
*   Reports Selected:
*     Transaction Code Exception
*     Program Abend
*     Security Violation
*     I/O Error
*     Snap Trace
*     Backout Failure
*   Report Output File - MGRXDD
*   Average Input DSN - Not Specified
*   Average Output DSN - Not Specified
          IMSPALOG     MGREX(
                       TCREPORT,
                       PGMABEND,
                       SECVIO,
                       IOERROR,
                       SNAPTRC,
                       BACKOUTFAIL,
                       DDNAME(MGRXDD))
* Resource Availability Report
*   Report Output File - AVALDD
*   Reports Selected:
*     Region
*     Trancode
*     Program
*     Database
          IMSPALOG     AVAIL(
                       DDNAME(AVALDD),
                       REGION,
                       TRANCODE,
                       PROGRAM,
                       DATABASE)
* CPU Usage Report
*   Report Output File - CPURDD
*   Ordering Options:
*     Report 1: 1 Region   2 Program  3 Trancode
*     Extract DSN - Not Specified
          IMSPALOG     CPUR(
                       DDNAME(CPURDD),
                       R-P-TC)
```

Figure 231. JCL with command input: Log Report Set SAMPLOG (2 of 3)

```
* Internal Resource Usage Report
*   Report Output File - IRURDD
*   Checkpoint Time Interval (mins) - 0
          IMSPALOG     IRUR(
                       DDNAME(IRURDD),
                       INTERVAL(0),
                       INCL(POOLS( Pool Statistics:
                       QP,         Message Queue
                       FP,         Message Format Buffer
                       DB,         OSAM Buffer
                       VS,         VSAM Buffer
                       SM,         Storage Management (PSB/DMB/CIOP)
                       AS,         Application Scheduling
                       PI,         Program Isolation
                       LT,         Latch
                       DLICALLS,   DL/I call
                       MISC,       Miscellaneous
                       CB,         Storage
                       LL,         Logical Logger
                       FI,         Fixed Pool Usage
                       DS,         Dispatcher/Dynamic SAP
                       RU,         User IRLM
                       RS,         System IRLM
                       RF)))       RACF
* Database Update Activity Report
*   Report Output File - DBUADD
*   Format 1
*   Uncommitted Block Updates Limit - 10000
*   Extract DSN - Not Specified
          IMSPALOG     DBUPDATE(
                       DDNAME(DBUADD),
                       FORMAT1)
          IMSPALOG     MAXBLOCK(10000)
* Deadlock Report
*   Reports Selected:
*     Summary
*   List Report Output File - DEADLOCK
*   Summary Report Output File - DEADLOCK
          IMSPALOG     DEADLOCK(
                       SUMMARY,
                       LISTDDN(DEADLOCK),
                       SUMMDDN(DEADLOCK))
* Checkpoint Report
*   Reports Selected:
*   Report Output File - CHECKPT
          IMSPALOG     CHECKPOINT(
                       DDNAME(CHECKPT))
          IMSPALOG     EXECUTE
/*
```

Figure 232. JCL with command input: Log Report Set SAMPLOG (3 of 3)

Shared Queue merge processing

To report performance in an IMS sysplex environment which uses shared queues, IMS PA receives log input from all the subsystems in the sysplex, and merges the log files to present the records to the report processors in time stamp sequence.

IMS PA log reports have three merge processing styles:

- Composite shared queue
- Composite chronological
- By subsystem

Composite shared queue

Composite shared queue reports process the input data in time stamp sequence across all subsystems combined. The log records to produce a Transaction Set (lifetime of a transaction) used to produce these reports may come from the log files of more

than one subsystem. The reports can only process intersecting time period data for the entire sysplex as there is a reliance of one subsystem's data to the other subsystems in the sysplex.

These reports are:
- All Transaction (MSGQ) Transit reports:
  - Analysis
  - Statistics
  - Log
  - Graphic Summary
  - Extract by Interval
  - Transaction Exception
  - Transaction History File
  - Form-based Transit List and Summary
- All Fast Path (EMH) Transit reports:
  - Analysis
  - Log
  - Extract by Interval
  - Transaction Exception
- Dashboard
- Management Exception: Transaction Exception/Average Summary
- Resource Availability: Line/Node report only

Composite chronological

Composite chronological reports receive log input for each subsystem as it becomes available, or when the requested time period commences. A single report is produced from data merged from all subsystems in the sysplex. Filtering by IMS subsystem ID is supported.

These reports are:
- Dashboard
- Management Exception: Error Conditions Log
- Database Trace (Full Function)
- DC Queue Manager Trace
- OSAM Sequential Buffering
- ESAF
- Region Histogram (a unique style of report in which the 13 columns can be for any region in any subsystem in the sysplex)
- DEDB Update Trace

By subsystem

By subsystem reports receive log input for each subsystem as it becomes available, or when the requested time period commences. A separate report is produced for each subsystem in the sysplex. The IMS subsystem ID is usually shown in the report heading. Filtering by IMS subsystem ID is supported.

These reports are:
- Resource Availability (except Line/Node)
- CPU Usage
- Internal Resource Usage
- Message Queue Utilization
- Database Update Activity
- BMP Checkpoint
- Fast Path Resource Usage reports:

- FP Resource Usage and Contention
- FP Database Call Statistics
- IFP Region Occupancy
- EMH Message Statistics
- DEDB Update Activity
- VSO Statistics

Pre-Merge Copy Processing

IMS PA processes the log data sets for a subsystem sequentially in the order specified on the IMS Subsystem Log Files panel, which should be in contiguous time stamp sequence for reliable results. For merging to occur, the sequence of log data sets for each IMS subsystem must be able to be read concurrently with those of all other IMS subsystems in the sysplex.

Log input may be from DASD or tape (or cartridge). Each subsystem in the sysplex can have a combination of DASD and tape log data sets.

If the log files are tape data sets, there may be more IMS subsystems than there are tape units available to IMS PA. In this case, they cannot be processed concurrently during the merge process. Some tape log input must first be copied to a DASD merge work file (`IPISMQW`*u*) before being passed on to the merge process.

The number of tape units available and the allocation attributes of the merge work file are specified via the dialog. See "Shared Queue Settings" on page 73 for details.

When the dialog generates the JCL to execute a Report Set, it identifies each input data set with a ddname in the format *Lxxxxunn* where *L* represents that it is a Log data set, *xxxx* is the 1- to 4-character IMS subsystem ID specified on the System Definitions panel, *u* is the unit assigned by IMS PA (0 for no affinity, 1–9, A–Z for affinity, giving a maximum of 35 tape units), and *nn* gives the sequence 01–99, A0–AZ, ... Z0–ZZ of the data sets within subsystem to keep them in the same order as specified on the System Definitions panel. In the case that there is no contention for tape units, the unit (*u*) is zero.

The only significance of the order in which the DD statements are generated is to obey the rules of unit affinity in that the data sets which first use the tape unit are specified (with no UNIT=AFF=) before any other data sets with affinity to the same unit (UNIT=AFF=*ddname*). Tape data sets from the one subsystem need not have the same unit affinity and hence may be copied to different DASD work files. The ddname of the data set is retained on the work file to identify the data.

There is one merge work file for each tape unit that is used during the pre-merge copy processing. The ddname of the merge work file is `IPISMQW`*u* where *u* corresponds to the unit affinity of each tape unit.

IMS PA optimizes the JCL to:

- Minimize the elapsed time by multitasking the copy to DASD. Each tape device used for copy processing has a subtask (and merge work file) assigned to it. The log input data sets are spread evenly across the tape devices, so each subtask processes approximately the same number.
- Minimize the number of tape data sets copied to DASD. IMS subsystems with the least number of tape log data sets are considered first for copy processing and appear first in the JCL.

- Minimize the volume of data copied. IMS PA filters and compresses the log records written to the merge work file. Log record filtering is based on specified time ranges and whether the activated reports require the log record.

The merge work file space allocation may need to be adjusted depending on the amount and nature of the log input data.

Specify the allocation attributes for the shared queue merge work file in your profile options 0.3 **Shared Queue Settings**. See "Shared Queue Settings" on page 73 for details.

Merge Work Files (IPISMQW*u*)

Merge Work Files are only required for Shared Queue log processing when both of the following situations exist:

- The log files are on tape
- There are more IMS subsystems than tape devices available to the job

IMS PA merges the log files from each sysplex system in time sequence. To do this, one log file from each system must be open concurrently. But this is not possible when there are more IMS subsystems than tape drives available to your batch job. In this case, IMS PA copies the required log records from one (or more) systems to the (DASD) Merge Work File. Then when IMS PA merges the log files from each system, it uses the DASD Merge Work File (not the Tape log file).

JCL example

Consider a sysplex with five IMS subsystems with various numbers of tape log input data sets. Only two tape units are available to the IMS PA batch job.

System	Number of Log Input Data Sets
IMSA	4
IMSB	5
IMSC	2
IMSD	3
IMSE	2

Since for this job only two tape units are deemed available, the IMS PA merge process can only read log input from two IMS subsystems concurrently. Tape to DASD copy is therefore required. Log input from three subsystems must be selected for copy processing prior to the merge. IMSC, D, and E are selected because they have the least number of log input data sets.

The generated JCL might then be as shown in the following figure.

```
//*  Log Input data sets
//LIMSC101 DD  DSN=IMSC.LOG01,...
//LIMSC202 DD  DSN=IMSC.LOG02,...
//LIMSE101 DD  DSN=IMSE.LOG01,UNIT=AFF=LIMSC101,...
//LIMSE202 DD  DSN=IMSE.LOG02,UNIT=AFF=LIMSC202,...
//LIMSD101 DD  DSN=IMSD.LOG01,UNIT=AFF=LIMSC101,...
//LIMSD202 DD  DSN=IMSD.LOG02,UNIT=AFF=LIMSC202,...
//LIMSD103 DD  DSN=IMSD.LOG03,UNIT=AFF=LIMSC101,...
//LIMSA001 DD  DSN=IMSA.LOG01,UNIT=AFF=LIMSC202,...
//LIMSA002 DD  DSN=IMSA.LOG02,UNIT=AFF=LIMSC202,...
//LIMSA003 DD  DSN=IMSA.LOG03,UNIT=AFF=LIMSC202,...
//LIMSA004 DD  DSN=IMSA.LOG04,UNIT=AFF=LIMSC202,...
//LIMSB001 DD  DSN=IMSB.LOG01,UNIT=AFF=LIMSC101,...
//LIMSB002 DD  DSN=IMSB.LOG02,UNIT=AFF=LIMSC101,...
//LIMSB003 DD  DSN=IMSB.LOG03,UNIT=AFF=LIMSC101,...
//LIMSB004 DD  DSN=IMSB.LOG04,UNIT=AFF=LIMSC101,...
//LIMSB005 DD  DSN=IMSB.LOG05,UNIT=AFF=LIMSC101,...
//*  Shared Queue Merge Work Files
//IPISMQW1 DD  UNIT=SYSDA,SPACE=(CYL,(100,20),RLSE)
//IPISMQW2 DD  UNIT=SYSDA,SPACE=(CYL,(100,20),RLSE)
```

Figure 233. JCL for Shared Queue Copy/Merge Processing

The IMS PA batch job then processes the log input as follows:

1. LIMSC101, LIMSE101, LIMSD101, LIMSD103 are read in that order using tape unit 1, and filtered and copied to merge work file 1.
2. At the same time as reading from tape unit 1, LIMSC202, LIMSE202, LIMSD202 are read in that order using tape unit 2, and filtered and copied to merge work file 2.
3. When the copies are completed, the two merge work files on DASD, together with IMSA log input (LIMSA001–4) on tape unit 1 and IMSB log input (LIMSB001–5) on tape unit 2 enter the merge process for passing data to the report log record handlers.

IMSPALOG **command**

The IMSPALOG batch command requests a log report. Multiple log reports can be requested in the one batch job.

Format

```
IMSPALOG     operands
```

The last IMSPALOG command in the batch job must include EXECUTE as its last operand. For clarity, ensure that there is only one EXECUTE operand in the batch job. The EXECUTE operand informs IMS PA that all log reports have been requested, and processing of log input can commence.

If IMSPALOG EXECUTE is omitted, IMS PA performs syntax checking of the input commands but does not execute any reports.

See “Log report operands” on page 422 for a description of the IMSPALOG operands.

Example

```
IMSPALOG     START(2018/04/12,10:00),STOP(2018/04/12,11:00)
IMSPALOG     ANALYSIS(TRANCODE,INCL(TC(DC*,AX*)))
IMSPALOG     CPUR(REGION,REGION-TRANCODE)
IMSPALOG     IRUR(INTERVAL(10),
             INCL(POOLS(QP,FP,DB,VS,SM,AS,PI,LT,DLICALLS,
                MISC,CB,LL,FI,DS,RU,RS,RF,ST,IM,EW)))
IMSPALOG     EXECUTE
```

From this example, IMS PA produces the following reports for the time period 10 a.m. to 11 a.m. on 12 April 2018:

- Transaction Transit Analysis report for transaction codes that start with DC or AX
- CPU Usage report broken down by region, and transaction code within region
- Internal Resource Usage report for all resource types

DISTRIBUTION **command**

The DISTRIBUTION batch command defines a Distribution to be used for monitor or log reporting. The Distribution describes the presentation and thresholds to be used by the report processors and presented in the report output.

For a detailed description see Chapter 11, “Distributions,” on page 157.

The DISTRIBUTION command does not invoke report processing. It works in conjunction with report processing that produces distribution report output.

Format

```
name      DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

name Specifies the name of the Distribution. This name associates the Distribution with a particular report or set of reports and must be one of the following: LOGIN, $IPDIST1, $IPDIST2, SYSCKPT, ELAP/SCH, ELAP/CAL, ELAP/IWT, IWTS/CAL, IWTSUMMY, DDIWELAP, FPBSCNT, FPBGQLN, FPBGELP, FPOTACT, FPOTWTA, FPOTBOQ, FPRCLIW, COMMELP, COMMIWE, COMMLFR, COMMLFT, COMMLFI, MSCQLEN, MSCQELP.

For the list of these Distributions, their titles, and the reports they apply to, see “Distribution and Report cross-reference” on page 161.

DISTRIBUTION
Identifies the attributes of the distribution graphs.

LIMITS Defines the nine limits which define nine ranges for the distributions. The nine limits must be in ascending sequence. When the distribution is printed, the limit values are printed at the left up the vertical axis of the graph. This operand is optional, and if omitted, the default limits are: 1,5,10,30,50,100,300,500,1000.

TITLE Defines the unit of measure for the graph. Up to 12 characters, including blanks, can be specified as the title. The title is printed on the left at the top of the vertical axis above the column of limit values. This operand is

optional, and if omitted, the default title is `Sc Mil Mic` for seconds, milliseconds and microseconds respectively.

MULTIPLY
Specifies a numeric value (typically a multiple of 10) to be used to multiply by each limit. This operand is optional, and if omitted, the default is `1000`.

EDITMASK
Specifies an edit mask to be used when printing the limit values. Two formats can be used:

1. Eleven (11) character quoted string.
2. Twenty four (24) character string that represents 12 hexadecimal values.

If less than the maximum number of characters allowed is specified, the mask is right justified and padded on the left with blanks.

If the quoted string is used, any character can be specified, but some characters have a special meaning, as follows:

Z Zero suppression
9 Digit mask
S Trigger start

Any other character is used in the result as is. The number of digit select characters (`Z`, `9`, `S`) must be odd, otherwise the low-order digit of the result will not be formatted.

If the hexadecimal string is used, up to 12 hexadecimal values (24 hex characters) can be represented. The hexadecimal string is the actual edit mask as used by the edit (ED and EDMK) assembler instructions. The mask can include any valid hexadecimal value, but some have a special meaning, as follows:

20 Digit selector
21 Significance starter
22 Field separator

This operand is optional, and if omitted, the default edit mask is `'ZZZ.ZZ9.999'` or `402020204B2021204B202020`.

Example

```
ELAP/CAL  DISTRIBUTION LIMITS(1,5,10,30,50,100,300,500,1000),
                       MULTIPLY(1000),
                       TITLE('Sc Mil Mic'),
                       EDITMASK('ZZZ.ZZ9.999')
```

In this example, the Distribution `ELAP/CAL` is used to produce distributions of DL/I call elapsed time. The time ranges are the limit values multiplied by the multiplier and would be 0-1000, 1001-5000, 5001-10000, 10001-30000, 30001-50000, 50001-100000, 100001-300000, 300001-500000, 500001-1000000, over 1000000. When formatted by the edit mask, they are printed as `1.000, 5.000, 10.000, ..., 1.000.000` where `1.000` represents 1 millisecond and `1.000.000` represents 1 second.

COPY command

The COPY batch command reads one or more members of the command library. The command library must be a partitioned data set defined by the `CMDLIB` DD statement.

COPY puts pre-coded commands from the command library into the input stream.

Format

```
COPY        member1[,member2,...]
```

The only operands for the COPY command are one or more member names in the command library. Each member may in turn contain COPY commands. The EXECUTE operand may be within or following the last COPY command.

Member names are scanned from left to right, and members are read in the order specified. Copied members may themselves employ the COPY command. To prevent COPY loops, any request for a member currently queued for read causes an error and the member is not processed. An error message is issued for any member not found in the command library.

COPY allows users to retrieve pre-coded commands and include them in the input stream. Pre-coded commands would usually include production level command data, or static command input like Distributions, Include and Exclude lists, or commonly used reports.

Example

In this example, LOGREPS contains a common set of Log report commands, and LOGDISTS contains the Distributions used by Log reporting.

```
IMSPALOG    START(2018/04/12,10:00),STOP(2018/04/12,11:00)
COPY        LOGREPS
IMSPALOG    EXECUTE
COPY        LOGDISTS
```

Log report operands

The IMSPALOG command has two types of operand: report operands and general options operands that apply to multiple reports.

General options are further divided into:

- "Log Global Options" on page 425: global options that apply to all reports
- "Transaction (MSGQ) Transit Options" on page 426: options that apply to Transaction Transit reports
- "Fast Path (EMH) Transit Options" on page 464: options that only apply to Fast Path Transit reports

A list of report operands and the reports they produce can be found in the sections below.

Transaction Transit reports

The Fixed-format Transaction Transit report operands for the IMSPALOG command are:

ANALYSIS
: Transaction Transit Analysis

STATS
: Transaction Transit Statistics

LOG
: Transaction Transit Log

GRAPH
: Transaction Transit Graphic Summary

EXTRACT
Transaction Transit Extract by Interval
TRANEXC
Transaction Exception
TRANHIST
Transaction History File

Transaction Transit reports (Form-based)

The Form-based Transaction Transit report operands for the IMSPALOG command are:
LIST Transaction Transit List (Form-based)
SUMMARY
Transaction Transit Summary (Form-based)
INDEX
IMS Transaction Index

Resource Usage and Availability reports

The Resource Usage and Availability report operands for the IMSPALOG command are:
DASHBOARD
Dashboard (Health Check)
MGREX
Management Exception
TRANRESU
Transaction Resource Usage
AVAIL Resource Availability
CPUR CPU Usage
IRUR Internal Resource Usage
MSCLSTAT
MSC Link Statistics
MSGQ Message Queue Utilization
DBUPDATE
Database Update Activity
HISTGRAM
Region Histogram
SB OSAM Sequential Buffering
DEADLOCK
Deadlock
CHECKPOINT
System Checkpoint
BMPCHKP
BMP Checkpoint
GAP Gap Analysis
COLDSTART
Cold Start Analysis

Fast Path Transit reports

The Fast Path Transit report operands for the IMSPALOG command are:
FPANALYSIS
Fast Path Transit Analysis
FPLOG
Fast Path Transit Log

FPEXTRACT
Fast Path Transit Extract by Interval
FPTRNEX
Fast Path Transaction Exception

Fast Path Resource Usage reports

The Fast Path Resource Usage report operands for the IMSPALOG command are:
FPIRUC
Fast Path Resource Usage and Contention
FPDBCALL
Fast Path Database Call Statistics
FPRGNO
IFP Region Occupancy
FPEMHQ
EMH Message Statistics
FPDBUPD
DEDB Update Activity
FPVSO
VSO Statistics

ATF Enhanced Summary Reports

The ATF Enhanced Summary report operands for the IMSPALOG command are:
ATFEXTR
Extract
ATFANALYSIS
Transaction Analysis
ATFDLICALL
DLI Call Analysis
ATFDB2CALL
DB2 Call Analysis
ATFMQCALL
IBM MQ Call Analysis

Trace reports

The Trace report operands for the IMSPALOG command are:
DCTRACE
DC Queue Manager Trace
DBTRACE
Database Trace (Full Function)
FPDBTRC
DEDB Update Trace
ESAF ESAF Trace

User-Written reports

The User-Written report operands for the IMSPALOG command are:
USERPGM
User-Written Record Processors

For further details of the reports and their default values, see the description of the corresponding dialog options in Chapter 20, “Requesting Log reports,” on page 287.

Log Global Options

The Log Global Options define output and general control information for the log reports.

Format

```
IMSPALOG    [START(date,time),]
            [STOP(date,time),]
            [OUTPUTDD(ddname),]                    default RPTOUT
            [PRINTAT(HOUR|STOP|EOF|nnnn),]
            [PAGESIZE(nnn),]                       default 60 lines
            [NOPCTSIGN,]
            [XTRHEADING,]
            [XTRCOMMA,]
            [IGNORSEQ,]
            [TRANEXIT(exitname),]
            [SETIMSID(LOG|DDNAME),]
```

START
: Global Start date and time

STOP
: Global Stop date and time

OUTPUTDD
: Transaction (MSGQ) Transit reports output ddname

PRINTAT
: Report break point specifies when reports are written

PAGESIZE
: Number of print lines per page

NOPCTSIGN
: Do not print % sign in report output (for some form-based reports)

XTRHEADING
: Include fields headings in Transit Traffic extract files

XTRCOMMA
: Use comma delimiter in Transit Traffic extract files

IGNORSEQ
: Ignore log sequencing errors

TRANEXIT
: Transaction Substitution Exit name; affects the Transit Analysis, Transit Statistics, and Transaction Exception reports

SETIMSID
: Source of IMS Processing ID.

  LOG
  : Derive the subsystem name from the IMS log records.

  DDNAME
  : Default. Use the subsystem name taken from the log input DD in the format L*xxxxunn* where *xxxx* is the IMSID, for example, `//LIMSA001 DD DSN=IMSA.SLDS`.

Example

```
IMSPALOG    START(2018/03/26,),STOP(2018/03/27,),
            OUTPUTDD(RPTOUT),
            PRINTAT(STOP),PAGESIZE(60),
            XTRCOMMA,IGNORSEQ
```

Example - Inflight processing

To generate this JCL, activate inflight processing on the IMS Performance Analyzer ISPF dialog and then submit one of the following reports:

- "Transaction Transit reports (Form-based)" on page 318
- "IMS Transaction Index" on page 329
- "Internal Resource Usage reports" on page 340

For details, see "Log Global Options" on page 294.

```
⋮
//*  In-flight transaction processing
//IMSINFLT DD  DSN=USR.IMSPA.INFLIGHT,
//             DISP=SHR
//IMSOTFLT DD  DSN=USR.IMSPA.OTFLIGHT,
//             DISP=SHR
⋮
⋮

//*  Report Set Command Input
//IPICMD   DD  *
* IMS PA Log Report
* Report Set Name - SAMPLOG
* Description - Sample Log Report Set
* Log Report Global Options
*   Log Input - LOGIN
*   Report Output - RPTOUT
*   Inflight transaction processing requested  1
*   Inflight dataset - ddname=IMSINFLT
*   Outflight dataset - ddname=IMSOTFLT
*   Inflight DSN - 'USR.IMSPA.INFLIGHT'
*   Outflight DSN - 'USR.IMSPA.OTFLIGHT'
         IMSPALOG     INPUTDD(LOGIN),
                      OUTPUTDD(RPTOUT),
⋮

//*  Switch In-flight transaction datasets  2
//RENAME   EXEC PGM=IDCAMS,(COND=0,NE,IPI)
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  *
  ALTER    USR.IMSPA.INFLIGHT -
  NEWNAME( USR.IMSPA.INFLIGHT.TMP )
  ALTER    USR.IMSPA.OTFLIGHT -
  NEWNAME( USR.IMSPA.INFLIGHT )
  ALTER    USR.IMSPA.INFLIGHT.TMP -
  NEWNAME( USR.IMSPA.OTFLIGHT )
/*
```

1 JCL generated by the ISPF dialog indicates that inflight processing has been requested.

2 Switching the INFLIGHT and OTFLIGHT data sets using an IDCAMS post step after reporting has completed successfully (RC=0).

Related reference:

"Log Global Options" on page 294
The IMS PA Log Global Options define general control information which applies to all active reports within the Report Set.

"Allocate IMS inflight data sets" on page 742
The sample library SIPISAMP contains a member with sample JCL to create IMS inflight data sets.

Transaction Transit Reports

This section contains the operands for Transaction Transit log reports.

Transaction (MSGQ) Transit Options

Transaction Transit Options define general control information for the Transaction Transit reports.

The Transaction Transit reports are:
- Transaction Transit Analysis
- Transaction Transit Statistics
- Transaction Transit Log
- Transaction Transit Graphic Summary
- Transaction Transit Extract by Interval
- Transaction Exception
- Transaction History File

These operands apply to all Transaction Transit reports unless overridden by individual reports.

Format

```
IMSPALOG    [PEAK(ppp),]           default 90 %
            [INMAX(nnnnn),]        default 60 seconds
            [OUTMAX(nnnnn),]       default 60 seconds
            [TSETSIZE(nnnnn),]     default 32767 transactions
            [INTERVAL(nnnn),]      default 15 minutes
            [ALIGN|NOALIGN,]
            [REPORTALL,]
            [QUALIFY([INCL(TC(list))|
                      EXCL(TC(list))],
                     [INCL(MSC),]
                     [INCL(BMP),]
                     [INCL(APPC),]
                     [INCL(MSGSW)])]
```

PEAK Peak percentile

INMAX
: Maximum Input Queue time

OUTMAX
: Maximum Output Queue time

TSETSIZE
: Maximum Transaction Set size

INTERVAL
: Time Interval in minutes

ALIGN
: Align Time Interval to the even hour

NOALIGN
: Do not align Time Interval to the even hour

QUALIFY
: The following options may be specified:

  `INCL(TC(list))` **or** `EXCL(TC(list))`
  : Selection criteria to filter (include or exclude) the report on Transaction Code.

  `INCL(MSC)`
  : Include MSC transactions

  `INCL(BMP)`
  : Include BMP transactions

  `INCL(APPC)`
  : Include APPC and OTMA transactions

  `INCL(MSGSW)`
  : Include Message Switches (CNT switches to ISC, MSC, and so on)

REPORTALL
: Include all transactions, regardless of whether there was a response to the originating LTERM.

  REPORTALL will automatically include all MSC, BMP, and APPC and OTMA transactions unless a QUALIFY statement exists that specifically includes one or more of these transaction types. In this scenario, the remaining un-selected options are not included, even if REPORTALL has been specified.

  REPORTALL does not report Message Switches. To include Message Switches, specify the INCL(MSGSW) option.

Example

Transaction Transit Analysis, Log and Graphic Summary with time interval 15 minutes, aligned to the hour, MSC, BMP, and APPC/OTMA transactions included, and message switches not included.

```
IMSPALOG     START(2018/06/25,07:15),STOP(2018/06/25,09:30),
             INPUTDD(LOGIN),OUTPUTDD(RPTOUT),
             PAGESIZE(60),PRINTAT(STOP)
IMSPALOG     INMAX(50),OUTMAX(50),PEAK(85),
             TSETSIZE(2500),
             INTERVAL(15),ALIGN,
             QUALIFY(INCL(TC((DSFJ,DSFM),F*,K*,(MDB,MDK))),
                     INCL(BMP),
                     INCL(MSC),
                     INCL(APPC))
IMSPALOG     ANALYSIS(TRANCODE)
IMSPALOG     LOG(FROM(2018/06/25,08:15),TO(2018/06/25,09:15))
IMSPALOG     GRAPH
```

Related reference:

"Transaction Transit Options" on page 301
The IMS PA Transaction Transit Options define control information that applies to the Transaction Transit reports within the Report Set.

ANALYSIS: Transaction Transit Analysis report

The ANALYSIS operand of the IMSPALOG batch command requests the Transaction Transit Analysis report.

Format

```
IMSPALOG     ANALYSIS([TRANCODE,]
                      [LTERM|USERID,]
                      [LTERM-TRANCODE|USERID-TRANCODE,]
                      [LINE,]
                      [CLASS,]
                      [TIME,]
                [REPORTALL,]
                [FROM(date,time),]
                [TO(date,time),]
                [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
                [INCL(LTERM(list))|EXCL(LTERM(list)),]
                [INCL(LINE(list))|EXCL(LINE(list)),]
                [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
                [INCL(CLASS(list))|EXCL(CLASS(list)),]
                [INCL(USERID(list))|EXCL(USERID(list))])
```

Any combination of the following reports can be requested. If all six reports are required, either specify the six report operands, or ALL.

TRANCODE
: By Transaction Code

LTERM **or** USERID
: By LTERM or User ID

LTERM-TRANCODE **or** USERID-TRANCODE
: By LTERM or User ID, broken down by Transaction Code

LINE
: By Line or VTAM Node

CLASS
: By Message Class

TIME
: By Time of Input

Transaction Transit Options that may be overridden are:

REPORTALL
: Report all transactions (otherwise only report those that respond back to the originating LTERM)

Other report options are:

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, Line, VTAM Node, Class, or User ID.

Example

Transaction Transit Analysis by Transaction Code and by Time with the report interval specified within global report interval, peak 95% (to check that 95% of transactions complete within a certain time), time interval 5 minutes, aligned to the hour, filtering on Transaction Code, message switches included, and MSC, BMP, and APPC/OTMA transactions not included.

```
IMSPALOG     START(2018/06/24,12:15),
             STOP(2018/06/25,12:15),
             OUTPUTDD(RPTOUT)
IMSPALOG     PEAK(95),INTERVAL(5),ALIGN,QUALIFY(INCL(MSGSW))
IMSPALOG     ANALYSIS(TRANCODE,
                      TIME,
                      FROM(2018/06/24,12:30),
                      TO(2018/06/24,13:00),
                      INCL(TRANCODE((A,K),M*,P*)))
IMSPALOG     EXECUTE
```

Related reference:

"Transaction Transit Analysis report" on page 305
The Transaction Transit Analysis report can show response time performance by logical terminal, transaction code, transaction code within logical terminal, message class, line or VTAM node, and time of input.

STATS: Transaction Transit Statistics report

The STATS operand of the IMSPALOG batch command requests the Transaction Transit Statistics report.

The Transaction Transit Statistics report is similar to the Analysis report, but presents the output as distributions.

Format

The format of the Transaction Transit Statistics report operand is the same as that for the Analysis report, but with the addition of a Distribution named LOGIN.

```
         IMSPALOG      STATS([TRANCODE,]
                             [LTERM|USERID,]
                             [LTERM-TRANCODE|USERID-TRANCODE,]
                             [LINE,]
                             [CLASS,]
                             [TIME,]
                       [REPORTALL,]
                       [FROM(date,time),]
                       [TO(date,time),]
                       [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
                       [INCL(LTERM(list))|EXCL(LTERM(list)),]
                       [INCL(LINE(list))|EXCL(LINE(list)),]
                       [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
                       [INCL(CLASS(list))|EXCL(CLASS(list)),]
                       [INCL(USERID(list))|EXCL(USERID(list))])
         IMSPALOG       EXECUTE
LOGIN    DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

Any combination of the following reports can be requested. If all six reports are required, either specify the six report operands, or ALL.

TRANCODE
: By Transaction Code

LTERM **or** USERID
: By LTERM or User ID

LTERM-TRANCODE **or** USERID-TRANCODE
: By LTERM or User ID, broken down by Transaction Code

LINE
: By Line or VTAM Node

CLASS
: By Message Class

TIME
: By Time of Input

Transaction Transit Options that may be overridden are:

REPORTALL
: Report all transactions (otherwise only report those that respond back to the originating LTERM)

Other report options are:

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, Line, VTAM Node, Class, or User ID.

To use a distribution, specify:

LIMITS
: Range limits for the vertical axis of the graph.

TITLE
: Title for vertical axis of the graph.

MULTIPLY
: Value by which to multiply each limit value for the graph.

MASK
: Edit mask for printing the limit values along the vertical axis of the graph.

Example

Transaction Transit Statistics by Transaction Code and by Message Class with global report interval specified, time interval 10 minutes, aligned to the hour, filtering on Transaction Code and Message Class, and MSC, BMP, and APPC/OTMA transactions and message switches not included.

```
         IMSPALOG      START(2018/06/24,),STOP(2018/06/25,),
                       OUTPUTDD(RPTOUT)
         IMSPALOG      INTERVAL(10),ALIGN
         IMSPALOG      STATS(TRANCODE,CLASS,
                       EXCL(TRANCODE(A*)),
                       INCL(CLASS(89)))
         IMSPALOG      EXECUTE
LOGIN    DISTRIBUTION  LIMITS(2,4,6,8,10,15,20,30,60),
                       TITLE('Sc Mil'),
                       MULTIPLY(1),
                       EDITMASK('ZZZ,ZZZ.ZZ9')
```

Related reference:

"Transaction Transit Statistics report" on page 308
The Transaction Transit Statistics report is a graphical representation of the information in the Transaction Transit Analysis report.

LOG: Transaction Transit Log report

The LOG operand of the IMSPALOG batch command requests the Transaction Transit Log report.

Format

```
         IMSPALOG     LOG(
                     [INCL(OK)|EXCL(OK),]
                     [INCL(MAX),]
                     [INCL(PARSFMT),]       report in IMSPARS format
                     [DDNAME(ddname),]      default LOGDD
                     [FROM(date,time),]
                     [TO(date,time),]
                     [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
                     [INCL(LTERM(list))|EXCL(LTERM(list)),]
                     [INCL(USERID(list))|EXCL(USERID(list))])
```

The messages to include in the report can be specified as follows:

INCL(OK)
: Only include messages remaining on the input (or output) queue for less time than that specified by INMAX (or OUTMAX).

EXCL(OK),INCL(MAX)
: Only include messages remaining on the input (or output) queue for a longer time than that specified by INMAX (or OUTMAX).

INCL(OK),INCL(MAX)
: Include all messages.

Transaction Transit Options that may be overridden are:

INCL(PARSFMT)
: Format report in IMSPARS format

Other report options are:

DDNAME
: The ddname for the recap report output. The default is `LOGDD`.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, or User ID.

Example

```
IMSPALOG     INMAX(45),OUTMAX(65),QUALIFY(INCL(APPC))
IMSPALOG     LOG(
             INCL(TRANCODE((M,ZZZZZZZZ))),
             INCL(MAX),
             INCL(OK),
             FROM(2018/06/25,07:15:00:00),
             TO(2018/06/25,08:00:00:00),
             DDNAME(LOGDD))
IMSPALOG     EXECUTE
```

Related reference:

"Transaction Transit Log report" on page 309
The Transaction Transit Log report shows the transit activity of each message originating from a logical terminal.

GRAPH: Transaction Transit Graphic Summary report

The GRAPH operand of the IMSPALOG batch command requests the Transaction Transit Graphic Summary report.

Format

```
 IMSPALOG     GRAPH
[IMSPALOG     ANALYSIS]
[IMSPALOG    [ALIGN|NOALIGN,]
             [INTERVAL(nnnn)]]
```

Transaction Transit Options that may be overridden are:

ALIGN **or** NOALIGN
Align time interval to the even hour or do not align time interval to the even hour.

Example

Transaction Transit Graphic Summary with narrow global report interval, peak 90% (to check that 90% of transactions complete within a certain time), time interval 10 minutes, aligned to the hour, MSC, BMP, and APPC/OTMA transactions not included, message switches included.

```
IMSPALOG     START(2018/06/25,12:15),STOP(2018/06/25,15:00),
             OUTPUTDD(RPTOUT)
IMSPALOG     PEAK(90),INTERVAL(10),ALIGN,QUALIFY(INCL(MSGSW))
IMSPALOG     ANALYSIS
IMSPALOG     GRAPH
IMSPALOG     EXECUTE
```

Related reference:

"Transaction Transit Graphic Summary report" on page 310
There are no individual options for this report. The report can only be activated or deactivated.

EXTRACT: Transaction Transit Extract by Interval

The EXTRACT operand of the IMSPALOG batch command requests the Transaction Transit Extract by Interval.

The extract processing merges previously extracted data in the input file, if it is specified, with data extracted in this run, and writes it to the output file. The output file contains records of data accumulated by time interval, for one or both of the following:

- Individual transaction codes within each time interval.
- All transaction codes in each time interval.

You need to extract the data at the level that you intend to export it; that is, if you want transaction data in your export file, you must extract by transaction code, and if you want interval totals in the export file, you must include the totals in the extract. However, at the time of export, the peak transaction percentage calculations occur and further filtering on transaction code and date/time is possible.

Format

```
          IMSPALOG     EXTRACT([TRANCODES,]
                               [TCTOTALS,]
                       [FROM(date,time),]
                       [TO(date,time),]
                       [INCL(TRANCODE(list))|EXCL(TRANCODE(list))])
         [IMSPALOG     [ALIGN|NOALIGN,]
                       [INTERVAL(nnnn),]
                       [QUALIFY([INCL(MSC),]
                                [INCL(BMP),]
                                [INCL(APPC),]
                                [INCL(MSGSW)])]
         [IMSPALOG      ANALYSIS]
          IMSPALOG      EXECUTE
/*
//IPIXTRTI DD  DSN=input extract file,DISP=SHR
//IPIXTRTO DD  DSN=output extract file,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
//             DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)
```

The input extract file is optional. The extract data set may be a generation data group (GDG).

TRANCODES
: Accumulate data for each Transaction Code

TCTOTALS
: Accumulate data for Transaction Code totals

Other report options are:

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code.

Transaction Transit Options that may be overridden are:

ALIGN **or** NOALIGN
: Align time interval to the even hour or do not align time interval to the even hour.

INTERVAL
: The summarization time interval. The default is 15 minutes.

Example

```
         IMSPALOG     START(,07:00:00:00),STOP(,10:30:00:00),
                      OUTPUTDD(RPTOUT)
         IMSPALOG     INTERVAL(10),ALIGN
         IMSPALOG     EXTRACT(TRANCODES,
                              TCTOTALS,
                      FROM(,07:30:00:00),TO(,09:30:00:00),
                      INCL(TRANCODE(T*)))
         IMSPALOG     EXECUTE
/*
//IPIXTRTI DD  DSN=IMSPA.EXTRACT.INFILE,DISP=SHR
//IPIXTRTO DD  DSN=IMSPA.EXTRACT.OUTFILE,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
//             DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)
```

Related reference:

"Transaction Transit Extract by Interval" on page 310
The Transaction Transit Extract by Interval creates extracts by time interval of transaction transit time data.

TRANEXC: Transaction Exception report and extract

The TRANEXC operand of the IMSPALOG batch command requests the Transaction Exception reports.

Format

```
         IMSPALOG     TRANEXC([TRANCODE,]
                              [USERID,]
                              [CLASS,]
                              [TIME,]
                     [SUMMARY,]
                     [SHRQ,]
                     [PRINTEXP,]
                     [FORMAT1|FORMAT2,]           default FORMAT1
                     [EXPECT(expectation-set-name),]
                     [DDNAME(ddname),]            default TRANEXC
                     [FROM(date,time),]
                     [TO(date,time),])
                     [INCL(TRANCODE(list))|EXCL(TRANCODE(list),)]
                     [INCL(USERID(list))|EXCL(USERID(list),)]
                     [INCL(CLASS(list))|EXCL(CLASS(list))])
        [IMSPALOG     ANALYSIS]
         IMSPALOG     EXECUTE
/*
//IPITXUT1 DD  DSN=total.traffic.dataset,DISP=(NEW,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
//IPITXUT2 DD  DSN=exeption.traffic.dataset,DISP=(NEW,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
//IPIEXPQ  DD  DSN=expect.sets.dataset,DISP=SHR
```

Any combination of the following reports may be requested:

TRANCODE
: By Transaction Code

USERID By User ID

CLASS By Message Class

TIME By Time of Input

Other report options are:

SUMMARY
Show totals only (do not show a breakdown by Transaction Code) in the User ID, Message Class, and Time of Input reports

SHRQ Show shared queue details in the report.

PRINTEXP
Print the Expectation Set values with the report.

FORMAT1 | FORMAT2
Original or extended format. FORMAT1 omits OK transactions (non-exceptions) from the User ID, Class, and Time reports. FORMAT2 gives a consistent breakdown of transactions (Total = Exceptions + OK) for all reports: Transaction Code, User ID, Class, and Time.

EXPECT Expectation Set (member name in the Expectation Sets data set).

DDNAME The ddname for the recap report output. The default is `TRANEXC`.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, or Class.

An Expectation Set may optionally be specified to define, by transaction code, boundaries for a number of performance measures. A transaction is flagged as an exception if it performs outside the ranges of values specified for that transaction code in the Expectation Set.

If an Expectation Set is not specified, all transactions are considered exceptions. `IPIEXPQ` is the ddname of the Expectation Sets data set.

Two extract data sets may optionally be specified:

- `IPITXUT1` Total Traffic data set contains detail records of all transactions.
- `IPITXUT2` Exception Traffic data set contains detail records of exception transactions only.

An extract data set may be a generation data group (GDG).

Example

```
         IMSPALOG     START(2018/01/15,),STOP(2018/01/16,)
         IMSPALOG     TRANEXC(TRANCODE,
                              TIME,
                      SHRQ,
                      EXPECT(TREXPECT))
         IMSPALOG     EXECUTE
/*
//IPITXUT1 DD  DSN=IMSPA.MSGQ.TOTAL.TRAFFIC,DISP=MOD
//IPITXUT2 DD  DSN=IMSPA.MSGQ.EXCEPT.TRAFFIC,DISP=MOD
//IPIEXPQ  DD  DSN=IMSPA.V440.EXPECTDS,DISP=SHR
```

Related reference:

"Transaction Exception report and extract" on page 313
The Transaction Exception report shows transaction performance information that affects response time.

TRANHIST: Transaction History File

The TRANHIST operand of the IMSPALOG batch command requests the Transaction History File.

This file is used to collect historical performance data, useful for long-term trend analysis and capacity planning. Information is summarized for each transaction code over a short time interval, including transaction transit, response and CPU times, as well as DLI call statistics.

Data is provided in a format suitable for loading directly into DB2, from where you can run queries or produce reports. For a description of the data, refer to "Understanding the Transaction History File" on page 759.

Sample DB2 jobs are supplied in the SIPISAMP library to help you create and load DB2 tables and run queries:

- Sample DDL job IPITHDDL to create the DB2 tables
- Sample Load job IPITHLOD to populate the DB2 tables with the history data
- Sample SQL query jobs IPITHQM1, IPITHQM2, IPITHQM3, IPITHQM4

Format

```
         IMSPALOG     TRANHIST(
                     [DDNAME(ddname),]           default TRANHIST
                     [INTERVAL(hh:mm:ss),]       default 00:15:00 (15 minutes)
                     [FROM(date,time),]
                     [TO(date,time),]
                     [INCL(TRANCODE(list))|EXCL(TRANCODE(list))])
/*
//IPITHIST DD  DSN=transaction history.file.dsn,DISP=(NEW,CATLG),
//             UNIT=SYSDA,SPACE=(TRK,(5,5),RLSE),
//             DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)
```

The report options are:

DDNAME
: The ddname for the recap report output. The default is TRANHIST.

INTERVAL
: The summarization time interval. The default is 15 minutes.

INCL | EXCL
: Selection criteria to filter (include or exclude) the report on transaction code or IMS subsystem ID.

Examples

Taking defaults:

```
IMSPALOG     TRANHIST
IMSPALOG     EXECUTE
```

Transaction history, summarized in half hour intervals, and filtered by transaction code:

```
IMSPALOG     TRANHIST(INTERVAL(00:30:00),
             EXCL(TRANCODE(A1*,B1*,C1*)))
IMSPALOG     EXECUTE
```

Related reference:

"Transaction History File" on page 316
The Transaction History File is used to collect historical performance data, useful for long-term trend analysis and capacity planning. Information is summarized for each transaction code over a short time interval, including transaction transit, response and CPU times, as well as DLI call statistics.

Transaction Transit reports (Form-based)

This section contains the operands for Form-Based Transaction Transit log reports.

Transaction Transit (Form-based) Options

Form-based Transaction Transit Options define general control information for the Form-based Transaction Transit reports.

The Form-based Transaction Transit Options apply to the following reports:

- "LIST: Transaction Transit List report and extract (Form-based)" on page 438
- "SUMMARY: Transaction Transit Summary report and extract (Form-based)" on page 440
- "Transaction Transit Reports" on page 426

Format

```
IMSPALOG    [BMPSYNC(YES|NO),]          default NO
            [PROCESSEDONLY(YES|NO),]    default NO
            [PROGRAMSWITCH(YES|NO)]     default YES
```

BMPSYNC

BMP treatment option.The following options may be specified:

YES
Treat each BMP syncpoint interval as a single transaction.

NO Default. Treat the BMP as a single transaction. All syncpoint intervals are accumulated and reported at job end.

When using this option, it is recommended that you collect type x'56FA' transaction accounting log records (TRANSTAT=YES) to analyze CPU usage and DLI call activity in more detail for each BMP syncpoint interval.

PROCESSEDONLY

Determines which shared queue transactions are reported.

The following options may be specified:

YES
Only report transactions that were processed on subsystems whose logs were input.

NO Report all transactions, even those processed on other subsystems whose logs were not input. This is the default option except when inflight processing has been activated. See "Log Global Options" on page 425.

PROGRAMSWITCH

Program switch reporting.The following options may be specified:

YES
Track transactions involved in program switch sequences. Program switch sequences are reported as a group. This is the default option except when inflight processing has been activated. See "Log Global Options" on page 425.

NO Report all transactions separately. Program switch sequences are not reported as a group.

Related reference:

"Transaction Transit (Form-based) Options" on page 318
The IMS PA Form-based Transaction Transit Options define control information that applies to the Form-based Transaction Transit reports within the Report Set.

"Report Set JCL" on page 741
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

LIST: Transaction Transit List report and extract (Form-based)

The LIST operand of the IMSPALOG batch command requests the Transaction Transit List report or extract for IMS fields.

Format

```
IMSPALOG    LIST(
           [DDNAME(ddname),]           default LISTnnnn
           [FROM(date,time),]
           [TO(date,time),]
           [EXTRACT(ddname),]          default LISXnnnn
           [TRANMIX(n),]               default 1
           [STARTLVL(n),]              default 2
           [COMPLVL(n),]               default 3
           [PRECISION(n),]             default 3
           [GROUP|NOGROUP|SECGROUP,]
           [OUTPUTMSG|NOOUTPUTMSG,]
           [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
           [INCL(LTERM(list))|EXCL(LTERM(list)),]
           [INCL(LINE(list))|EXCL(LINE(list)),]
           [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
           [INCL(CLASS(list))|EXCL(CLASS(list)),]
           [INCL(USERID(list))|EXCL(USERID(list)),]
           [DELIMIT(field-delimiter)|NODELIMIT,]     default , (comma)
           [LABELS|NOLABELS,]
           [FLOAT|NOFLOAT,]
           [FIELDS(field1,...)])
```

DDNAME
: DDname for the report output. The default is LIST*nnnn* where *nnnn* is a sequential number in the range 0001–9999.

FROM **and** TO
: The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

EXTRACT
: DDname for the extract output. The default is LISX*nnnn* where *nnnn* is a sequential number in the range 0001–9999.

TRANMIX
: Specify the mix of transactions to report:

  1 All transactions

  2 All transactions, excluding IFP.

  3 IFP transactions only.

  4 Transactions that use Fast Path (EMH and/or DEDB).

  5 All transactions, excluding BMP.

  6 Non-message driven BMP only.

STARTLVL
: Specify a value in the range 1–3 to specify the minimum transaction start level for reporting.

COMPLVL
: Specify a value in the range 0–6 to specify the minimum transaction completion level for reporting.

PRECISION
: The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places where 3 is millisecond precision and 6 is microsecond precision.

GROUP | NOGROUP | SECGROUP

: GROUP
: Indicates that a 1000's separator in time and count fields is to be included in the output. The separator will be a comma for count fields and a decimal point for time fields.

: NOGROUP
: Indicates that a 1000's separator in time and count fields will not be included in the output.

: SECGROUP
: Indicates that the separator character will delineate the decimal point only. Applies to time fields only and assumes GROUP for count fields.

OUTPUTMSG | NOOUTPUTMSG

: OUTPUTMSG
: Report all output messages from the transaction.

: NOOUTPUTMSG
: Report only the first output message for the transaction.

INCL | EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, Line, VTAM node, Message class, User ID.

DELIMIT | NODELIMIT

: DELIMIT
: The field delimiter, enclosed in quotes, to be used to separate each data field in the extract data set.

: NODELIMIT
: A field delimiter is not to be used to separate each data field in the extract data set.

LABELS | NOLABELS

: LABELS
: The first record to be written to the extract data set is to be a field labels record.

: NOLABELS
: Field labels are to be omitted from the extract data set.

FLOAT | NOFLOAT

: FLOAT
: Write numeric fields in the extract in FLOAT format. Specify FLOAT if you plan to import the extract into a DB2 table. When

the DB2 load utility is used, it will interpret all numerical fields reliably and consistently in FLOAT format. Time fields are in units of seconds and count fields are real numbers.

NOFLOAT
: Numeric fields in the extract will be written in character format according to the Precision and Digit Grouping options. This is suitable when importing the extract data into spreadsheets that expect character-based data.

FIELDS
: Specifies which fields are included in the report or extract, their order, and format. For the list of available fields, see the Chapter 41, "Glossary of Report Form field names," on page 777. If the FIELDS operand is omitted, the default report or extract is produced.

Example

```
IMSPALOG LIST(FIELDS(TRANCODE,
                     TERMINAL,
                     USERID,
                     CPUTIME,
                     TOTALTM,
                     TRANCNT))
```

Related concepts:

"LIST Report Form" on page 248
The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.

Related reference:

"Transaction Transit List report and extract" on page 320
The options for the Transaction Transit List report and extract are described here.

SUMMARY: Transaction Transit Summary report and extract (Form-based)

The SUMMARY operand of the IMSPALOG batch command requests the Transaction Transit Summary Report or Extract for IMS fields.

Format

```
IMSPALOG    SUMMARY(
           [DDNAME(ddname),]           default SUMMnnnn
           [FROM(date,time),]
           [TO(date,time),]
           [INTERVAL(hh:mm:ss),]       default 00:01:00
           [EXTRACT(ddname),]          default SUMXnnnn
           [TRANMIX(n),]               default 1
           [STARTLVL(n),]              default 2
           [COMPLVL(n),]               default 3
           [PRECISION(n1,n2),]             default 3,0
           [GROUP|NOGROUP|SECGROUP,]
           [TOTALS(n)|NOTOTALS,]        default 0
           [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
           [INCL(LTERM(list))|EXCL(LTERM(list)),]
           [INCL(LINE(list))|EXCL(LINE(list)),]
           [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
           [INCL(CLASS(list))|EXCL(CLASS(list)),]
           [INCL(USERID(list))|EXCL(USERID(list)),]
           [DELIMIT(field-delimiter)|NODELIMIT,]     default , (comma)
           [LABELS|NOLABELS,]
           [FLOAT|NOFLOAT,]
            FIELDS(field1[(options)],...))
```

DDNAME
: DDname for the report output. The default is SUMM*nnnn* where *nnnn* is a sequential number in the range 0001–9999.

FROM **and** TO
: The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

EXTRACT
: DDname for the extract output. The default is SUMX*nnnn* where *nnnn* is a sequential number in the range 0001–9999.

INTERVAL
: Applies when you want to summarize activity over time. It is used when the SUMMARY Report Form has one or both of the sort fields STARTIMS or STARTCON included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each.

TOTALS
: The grand total and the level of subtotaling required. A totals level of 0 will produce grand totals only in the report. Specify a totals level in the range 1–7 to produce both a grand total and subtotals to the corresponding key level.

NOTOTALS
: No grand totals or subtotals will be included in the report.

TRANMIX
: Specify the mix of transactions to report:

  1 All transactions

  2 All transactions, excluding IFP.

  3 IFP transactions only.

4 Transactions that use Fast Path (EMH and/or DEDB).

5 All transactions, excluding BMP.

6 Non-message driven BMP only.

STARTLVL
Specify a value in the range 1–3 to specify the minimum transaction start level for reporting.

COMPLVL
Specify a value in the range 0–6 to specify the minimum transaction completion level for reporting.

PRECISION
The precision of numeric form fields.

The first value *n1* specifies the precision of time-based fields, from 3 (millisecond precision) to 6 (microsecond precision). CPU and elapsed times are rounded up where necessary. Time stamps are truncated.

The second value *n2* specifies the precision of count fields, applicable only when reported as average, from 0 to 2 decimal places.

GROUP | NOGROUP | SECGROUP

GROUP
Indicates that a 1000's separator in time and count fields is to be included in the output. The separator will be a comma for count fields and a decimal point for time fields.

NOGROUP
Indicates that a 1000's separator in time and count fields will not be included in the output.

SECGROUP
Indicates that the separator character will delineate the decimal point only. Applies to time fields only and assumes GROUP for count fields.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, Line, VTAM node, Message class, User ID.

DELIMIT | NODELIMIT

DELIMIT
The field delimiter, enclosed in quotes, to be used to separate each data field in the extract data set.

NODELIMIT
A field delimiter is not to be used to separate each data field in the extract data set.

LABELS | NOLABELS

LABELS
The first record to be written to the extract data set is to be a field labels record.

NOLABELS
Field labels are to be omitted from the extract data set.

FLOAT | NOFLOAT

FLOAT
: Write numeric fields in the extract in FLOAT format. Specify FLOAT if you plan to import the extract into a DB2 table. When the DB2 load utility is used, it will interpret all numerical fields reliably and consistently in FLOAT format. Time fields are in units of seconds and count fields are real numbers.

NOFLOAT
: Numeric fields in the extract will be written in character format according to the Precision and Digit Grouping options. This is suitable when importing the extract data into spreadsheets that expect character-based data.

FIELDS
: Specifies which fields are included in the report or extract, the order in which they appear in the report, and the statistical functions used to summarize the data. For the list of available fields, see the Chapter 41, "Glossary of Report Form field names," on page 777. If the FIELDS operand is omitted, the default report or extract is produced.

  Up to 8 sort key fields can be specified, and at least one must be specified. The order of the key fields in the list defines the sort precedence, with the first key field being the major sort field. For each key field, the report can be ordered in ascending (ASCEND) or descending (DESCEND) sequence. The default is ascending. Sort key fields identify the grouping required for summarization, and can be STARTIMS or any character field.

  The sort key fields must be specified first in the list ahead of the numeric fields. The only field that can appear ahead of a key field is TRANCNT.

  In addition to the sort key fields, one numeric field can be selected as ascending or descending to activate Alternate Sequencing. This will change the order of report lines from sort key to numeric field sequence. For example, specify `RESPIMS(DESCEND)` to see the transactions with the highest response time at the top of the report. Note that grouping by sort key remains unaffected by alternate sequencing.

  TRANCNT is a special field computed by IMS PA. It reports the number of transactions. TRANCNT can be reported anywhere on the print line by including it in the FIELDS specification.

  Key fields must be specified first in the FIELDS list.

  All numeric fields (except TRANCNT) are summarized using any number of the following statistical functions:

  AVE Average value (this is the default if a field is specified without a function)
  COUNT Number of transactions with a value
  DATE STARTIMS field: date in the format *yyyy-mm-dd*
  DEV Standard deviation
  HIDE Include field in key but do not print
  ISO STARTIMS field: date and time in the format *yyyy-mm-dd hh.mm.ss*
  MAX Maximum value
  MIN Minimum value
  TIME STARTIMS field: Time in the format *hh.mm.ss* (this is the default if format is not specified)
  TOTAL Sum total
  nnn Peak percentile value in the range 50%–100%

RNGPERC

Distribution: Percentage of values from a specified limit value or within a range. Specify one of the following options:

RNGPERC(*operator value***)**

Specify a reporting limit. Use this parameter report a distribution by splitting the values reported by a single field into different columns. For example:

```
FIELDS(STARTIMS(TIME,ASCEND),
       IMSID(ASCEND),
       TRANCODE(ASCEND),
       TRANCNT,
       TOTALTM(MIN),
       TOTALTM(AVE),
       TOTALTM(MAX),
       TOTALTM(RNGPERC(<10)),
       TOTALTM(RNGPERC(<50)),
       TOTALTM(RNGPERC(<100)),
       TOTALTM(RNGPERC(<200)),
       TOTALTM(RNGPERC(<500)),
       TOTALTM(RNGPERC(>=500)),
       TOTALTM(RNGCOUNT(>=500))))
```

The following values of *operator* are valid: =, >, >=, <, and <=.

Character ranges: Specify a character range with character-based fields. Where a blank or null value is valid for a particular field, use a hyphen (-).

RNGPERC(*from - to***)**

Report on a range of values greater than or equal to the value of *from*, and less than (but *not equal*) to the value of *to*.

A character range can not be specified using this option.

RNGCOUNT

Distribution: Count of values from a specified limit value or within a range. Specify one of the following options:

RNGCOUNT(*operator value***)**

Specify a reporting limit. The following values of *operator* are valid: =, >, >=, <, and <=.

Character ranges: Specify a character range with character-based fields. Where a blank or null value is valid for a particular field, use a hyphen (-).

RNGCOUNT(*from - to***)**

Report on a range of values greater than or equal to the value of *from*, and less than (but *not equal*) to the value of *to*.

A character range can not be specified using this option.

Example 1

```
IMSPALOG SUMMARY(FIELDS(ORGTRAN(ASCEND),
                        TRANCODE(ASCEND),
                        SWITTIME(HIDE,ASCEND),
                        TOTALTM(AVE),
                        INPUTQ(90),
                        CPUTIME(AVE)))
```

Related concepts:

"SUMMARY Report Form" on page 251
The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

Related reference:

"Transaction Transit Summary report and extract" on page 327
The Transaction Transit Summary report and extract options are described here.

INDEX: IMS Transaction Index

The INDEX operand of the IMSPALOG batch command requests the IMS Transaction Index.

The IMS Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS log about that transaction. Optionally, you can request that the index include additional information for external subsystems or database update activity or both. For more information, see "Creating and using the index for reporting" on page 273.

Format

```
IMSPALOG  INDEX(
             [ESAF,]
             [DBUPDATE])
             [ABEND,]
             [PROCESS(9999),]            default 0.50 seconds
             [TOTAL(9999),]              default 1.00 seconds
             [PGMSWI,]
             [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
             [INCL(LTERM(list))|EXCL(LTERM(list)),]
             [INCL(LINE(list))|EXCL(LINE(list)),]
             [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
             [INCL(CLASS(list))|EXCL(CLASS(list)),]
             [INCL(USERID(list))|EXCL(USERID(list))])
IMSPALOG  EXECUTE
```

Related reference:

"IMS Transaction Index" on page 329
The IMS Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS log about that transaction.

Resource Usage and Availability reports

This section contains the operands for Resource Usage and Availability log reports.

DASHBOARD: Dashboard report

The DASHBOARD operand of the IMSPALOG batch command requests the Dashboard report.

This report provides a quick overview of critical system performance indicators, including transaction throughput and IMS system resources. It can highlight potential performance problems quickly, providing a springboard to other reports that provide more detailed information.

Format

```
IMSPALOG     DASHBOARD(
            [DDNAME(ddname)])          default DASH
```

The purpose of this report is a health check of the total system. There are no tailoring options.

The only option is:
DDNAME The ddname for the recap report output. The default is DASH.

Example

Taking defaults:

```
IMSPALOG     DASHBOARD
IMSPALOG     EXECUTE
```

Related reference:

"Dashboard report" on page 330
The Dashboard report provides a quick overview of critical system performance indicators, including transaction throughput and IMS system resources. It can highlight potential performance problems quickly, providing a springboard to other reports that provide more detailed information.

MGREX: Management Exception report

The MGREX operand of the IMSPALOG batch command requests the Management Exception report.

The report has two sections:

- Management Exception Summary containing transaction exceptions and averages
- Error Condition Log reporting up to five types of errors:
  - Program Abend
  - Backout Failure
  - Security Violation
  - Snap Trace
  - I/O Error

Format

```
         IMSPALOG     MGREX([TCREPORT,]
                            [PGMABEND,]
                            [BACKOUTFAIL,]
                            [SECVIO,]
                            [IOERROR,]
                            [SNAPTRC,]
                       [INCL(PRINT(ALL)|PRINT(AVERAGE)|PRINT(ALL,AVERAGE)),]
                       [EXPECT(expectation-set-name),]
                       [OMIT(nnn),]
                       [QUEUES(nnn),]
                       [DDNAME(ddname),]           default MGRXDD
                       [FROM(date,time),]
                       [TO(date,time),]
                       [NOOTHERS,]
                       [INCL(TRANCODE(list))|EXCL(TRANCODE(list))])
         IMSPALOG     EXECUTE
/*
//IPIAVGQ  DD  DSN=averages.input.dataset,DISP=SHR
//IPIAVGO  DD  DSN=averages.output.dataset,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(TRK,(2,2),RLSE),
//             DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)
//IPIEXPQ  DD  DSN=expect.sets.dataset,DISP=SHR
```

Any combination of the following reports may be requested:

TCREPORT
: Transaction Exception/Average.

PGMABEND
: Program Abends in Error Condition Log.

BACKOUTFAIL
: Backout Failures in Error Conditions Log.

SECVIO
: Security Violations in Error Conditions Log.

IOERROR
: I/O Errors in Error Condition Log.

SNAPTRC
: Snap Traces in Error Condition Log.

Other report options are:

INCL(PRINT(ALL))
: Report all transactions, not just exceptions.

INCL(PRINT(AVERAGE))
: Report exceptions only and print the input Averages data set.

INCL(PRINT(ALL,AVERAGE))
: Report all transactions and print the input Averages data set.

EXPECT
: Expectation Set (member name in the Expectation Sets data set).

OMIT Omit messages after *nnn* minutes on the report processing queue.

QUEUES
: The number of queues used in processing the report.

DDNAME
: The ddname for the recap report output. The default is `TRANHIST`.

NOOTHERS
: Omit `*OTHERS*` category from report.

  NOOTHERS is used in conjunction with Trancode Include/Exclude Selection Criteria. By default, transaction codes and programs that are

excluded by filtering are reported in a group called *OTHERS*, and included in the report subtotals and totals. When NOOTHERS is specified, transaction codes that are excluded by filtering are not reported, and not included in the report subtotals and totals.

INCL | EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code.

An Expectation Set may optionally be specified so the report can identify transactions performing outside "expectations". If an Expectation Set is not specified, exceptions are not reported. IPIEXPQ is the ddname of the Expectation Sets data set.

Two averages data sets may optionally be specified:
- IPIAVGQ Input Averages data set.
- IPIAVGO Output Averages data set.

An Averages Data Set may be a generation data group (GDG).

Example

```
         IMSPALOG     START(2018/01/06,),STOP(2018/01/07,)
         IMSPALOG     MGREX(TCREPORT,
                      PGMABEND,SECVIO,IOERROR,SNAPTRC,BACKOUTFAIL,
                      INCL(PRINT(ALL)),
                      EXPECT(EXPMGRX1),
                      OMIT(3),QUEUES(250))
         IMSPALOG     EXECUTE
/*
//IPIAVGQ  DD  DSN=IMSPA.V440.GDGAVG(0),DISP=SHR
//IPIAVGO  DD  DSN=IMSPA.V440.GDGAVG(+1),DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(TRK,(2,2),RLSE),
//             DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)
//IPIEXPQ  DD  DSN=IMSPA.V440.EXPECTDS,DISP=SHR
```

Related reference:

"Management Exception report" on page 331
The Management Exception report is designed to give managers a concise survey of selected, critical operands from other IMS PA reports. The report shows, by exception, which operands are outside specified boundaries.

TRANRESU: Transaction Resource Usage report

The TRANRESU operand of the IMSPALOG batch command requests the Transaction Resource Usage report.

This report provides a comprehensive overview of transaction resource usage, including:
- Scheduling statistics, such as WFI
- CPU usage
- DL/I call statistics
- Enqueue statistics
- DBCTL DB and I/O usage

Format

```
IMSPALOG      TRANRESU(
                      [LIST,]
                      [SUMMARY,]
                      [CALLSUM,]
              [DB,][DC,][DLI,][ENQ,]
              [LISTDDN(ddname),]          default TRANRESU
              [SUMMDDN(ddname),]          default TRANRESU
              [CALLDDN(ddname),]          default TRANRESU
              [FROM(date,time),]
              [TO(date,time),]
              [INCL(REGION(list))|EXCL(REGION(list)),]
              [INCL(REGJBN(list))|EXCL(REGJBM(list)),]
              [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
              [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
              [INCL(IMSID(list))|EXCL(IMSID(list))])
```

Any combination of the following reports can be requested.

LIST Long list

SUMMARY
: Long summary

CALLSUM
: Short (DLI Call) summary

Other report options are:

DB Include DB calls. This option is only applicable to LIST and SUMMARY reports.

DC Include DC calls. This option is only applicable to LIST and SUMMARY reports.

DLI Include other DLI calls. This option is only applicable to LIST and SUMMARY reports.

ENQ Include ENQ/DEQ counts. This option is only applicable to LIST and SUMMARY reports.

LISTDDN
: DDname for the output of the LIST report

SUMMDDN
: DDname for the output of the SUMMARY report

CALLDDN
: DDname for the output of the CALLSUM report

INCL|EXCL
: Selection criteria to filter the report on Region ID, Region Jobname, Transaction Code, Program (PSB), or IMS subsystem ID

Example

All reports, all calls and counts from yesterday's data:

```
IMSPALOG     START(-1,),STOP(0,),
IMSPALOG     TRANRESU(
             LIST,
             SUMMARY,
             CALLSUM,
             DB,
             DC,
             DLI,
             ENQ,
```

```
                LISTDDN(TRANRESU),
                SUMMDDN(TRANRESU),
                CALLDDN(TRANRESU))
        IMSPALOG    EXECUTE
```

Related reference:

"Transaction Resource Usage report" on page 335
This report provides a comprehensive overview of transaction resource usage.

AVAIL: Resource Availability report

The AVAIL operand of the IMSPALOG batch command requests the Resource Availability report.

Format

```
        IMSPALOG    AVAIL([REGION,]
                          [TRANCODE,]
                          [PROGRAM,]
                          [DATABASE,]
                          [LINE,]
                    [DDNAME(ddname),]          default AVALDD
                    [FROM(date,time),]
                    [TO(date,time),]
                    [INCL(REGION(list))|EXCL(REGION(list))|
                     INCL(REGJBN(list))|EXCL(REGJBN(list)),]
                    [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
                    [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
                    [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
                    [INCL(LINE(list))|EXCL(LINE(list)),]
                    [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
                    [INCL(IMSID(list))|EXCL(IMSID(list))])
```

Any combination of the following reports can be requested. If all five reports are required, either specify the five report operands, or ALL.

REGION
: By Region

TRANCODE
: By Transaction Code

PROGRAM
: By Program (PSB)

DATABASE
: By Database

LINE
: By Line or VTAM Node

Other report options are:

DDNAME
: DDname for the recap report output. The default is `AVALDD`.

INCL|EXCL
: Selection criteria to filter the report on Region ID, Region Jobname, Transaction Code, Program (PSB), Database, Line, VTAM Node, or IMS subsystem ID

Example

```
        IMSPALOG    START(2018/06/24,),STOP(2018/06/25,)
        IMSPALOG    AVAIL(
                    REGION,TRANCODE,PROGRAM,DATABASE,LINE,
                    INCL(REGJBN(A*)),
                    INCL(TRANCODE(B*)),
```

```
                    INCL(PROGRAM(C*)),
                    INCL(DATABASE(D*)),
                    INCL(LINE(5)),
                    INCL(VTAMNODE(V*)),
                    INCL(IMSID(IMSA)))
         IMSPALOG   EXECUTE
```

Related reference:

"Resource Availability report" on page 336
The Resource Availability report indicates the relative amount of time a specific resource is active, idle, or unavailable.

CPUR: CPU Usage report and extract

The CPUR operand of the IMSPALOG command requests the CPU Usage report and optionally an extract file.

Up to five reports can be requested, specifying any combination of the following to produce the reports sequenced accordingly:

- Region
- Program (PSB)
- Transaction Code

The format of the operand is as follows:

```
         IMSPALOG    CPUR([report-order,]     default R-P-TC
                    [DDNAME(ddname),]         default CPURDD
                    [FROM(date,time),]
                    [TO(date,time),]
                    [NOOTHERS,]
                    [INCL(REGION(list))|EXCL(REGION(list))|
                     INCL(REGJBN(list))|EXCL(REGJBN(list)),]
                    [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
                    [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
                    [INCL(IMSID(list))|EXCL(IMSID(list))])
         IMSPALOG    EXECUTE
$IPDIST1 DISTRIBUTION [LIMITS(value1,...,value9),]          Processing (CPU) Time
                    [TITLE('text'),]
                    [MULTIPLY(nnnn),]
                    [EDITMASK('char.mask')|EDITMASK(hex.mask)]
$IPDIST2 DISTRIBUTION [LIMITS(value1,...,value9),]          Elapsed Time
                    [TITLE('text'),]
                    [MULTIPLY(nnnn),]
                    [EDITMASK('char.mask')|EDITMASK(hex.mask)]
/*
//CPURXTRO DD  DSN=cpu.usage.extract.dataset,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
```

If the Distributions are not specified, default Distributions will apply at run time.

report-order represents up to 5 combinations of the following ordering operands, with default REGN-PROG-TRAN (order by Region, then Program, then Transaction Code). A "combination" may be one, two, or three of the ordering operands.

REGN By Region
PROG By Program (PSB) name
TRAN By Transaction Code

Other report options are:

DDNAME
: DDname for the recap report output. The default is CPURDD.

NOOTHERS
: Omit “OTHERS” category from report.

  NOOTHERS is used in conjunction with Trancode and Program Include/Exclude Selection Criteria. By default, transaction codes and programs that are excluded by filtering are reported in a group called *OTHERS*, and included in the report subtotals and totals. When NOOTHERS is specified, transaction codes and programs that are excluded by filtering are not reported, and not included in the report subtotals and totals.

INCL | EXCL
: Selection criteria to filter the report on Region ID or Region Jobname, Transaction Code, Program (PSB), or IMS subsystem ID

To extract CPU Usage details to an output file, specify an extract data set with ddname CPURXTRO. You can specify global options XTRHEADING to include column headings in the extract file and XTRCOMMA to use a comma as the field delimiter. See “Log Global Options” on page 425 for details.

To use a DISTRIBUTION, specify:

LIMITS
: Range limits for the vertical axis of the graph.

TITLE
: Title for vertical axis of the graph.

MULTIPLY
: Value by which to multiply each limit value for the graph.

MASK
: Edit mask for printing the limit values along the vertical axis of the graph.

See “DISTRIBUTION command” on page 420 for details.

Example

Four reports with filtering, ordered by:
- Program
- Transaction Code
- Transaction Code within Region
- Program within Transaction Code within Region

```
         IMSPALOG     CPUR(P,TC,R-TC,R-TC-P,
                      INCL(REGJBN(D*)),
                      INCL(TRANCODE((A,K),M*)),
                      EXCL(PROGRAM(K*)),
                      INCL(IMSID(IMSA,IMSB)))
         IMSPALOG     EXECUTE
$IPDIST1 DISTRIBUTION LIMITS(25,50,75,100,150,200,300,500,1000),
                      TITLE('Sc Mil'),MULTIPLY(1),
                      EDITMASK('ZZZ,ZZZ.ZZ9')
$IPDIST2 DISTRIBUTION LIMITS(300,600,900,1200,1500,2000,3000,5000,10000),
                      TITLE('Sc Mil'),MULTIPLY(1),
                      EDITMASK('ZZZ,ZZZ.ZZ9')
```

Related reference:

“CPU Usage report and extract” on page 338
The CPU Usage report gives statistics for CPU time and elapsed time during a specified period for regions, transactions and programs.

IRUR: Internal Resource Usage report

The IRUR operand of the IMSPALOG batch command requests the Internal Resource Usage reports.

Format

```
IMSPALOG     IRUR([INCL(POOLS(report-list))|    default Include All
                  EXCL(POOLS(report-list)),]
             [DDNAME(ddname),]                  default IRURDD
             [INTERVAL(nnnn),]                  default 0 minutes
             [FASTPATH,]                        default no FP
             [PRINTAT([I|S]),]                  default S
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
```

INCL/EXCL(POOLS(*report-list***))**

report-list may be any combination of the following reports:

AS Application Scheduling Statistics
CB Storage Statistics
C6 64-bit Cache Statistics
DB OSAM Buffer Pool Statistics
DLICALLS
DL/I Call Statistics
DS Dispatcher/Dynamic SAP Statistics
EW EWLM Statistics
FB Fast Path 64-bit Buffer Statistics
FI Fixed Pool Usage Statistics
FP Message Format Buffer Pool Statistics
IM IMODULE Statistics
LL Logger Statistics
LT Latch Statistics
MISC Miscellaneous Statistics
PI Program Isolation Statistics
QP Message Queue Pool Statistics
RF RACF Statistics
RS IRLM System Statistics
RU IRLM Subsystem Statistics
SM Variable Pools Statistics
ST Virtual Storage usage
UX User Exit Statistics (introduced in IMS V12)
VS VSAM Buffer Pool Statistics
TC Individual TCB Statistics (introduced in IMS V14)
S6 64-bit Storage Statistics (introduced in IMS V14)

If INCL/EXCL(POOLS) is omitted, all reports are produced.

DDNAME DDname for the recap report output. The default is IRURDD.

INTERVAL
Do not report checkpoints that are less than *nnnn* minutes apart.

FASTPATH
Include Fast Path transaction count in the Miscellaneous Statistics report.

PRINTAT(*value***)**

Specify one of the following values:

S or STOP
Print a report at the end of each run. This is the default.

I or INTERVAL
Print a report after each checkpoint.

Tip: Use PRINTAT(INTERVAL) only when INTERVAL(0) has been specified and the "Log Global Options" on page 425 are set to PRINTAT(STOP). Results may be unpredictable if multiple break conditions are specified.

INCL|EXCL
Selection criteria to filter (include or exclude) the report on IMS subsystem ID.

Example

```
IMSPALOG     START(,10:00),STOP(,14:30)
IMSPALOG     IRUR(
             INCL(POOLS(QP,FP,DB,VS,SM,AS,PI,LT,DLICALLS,
                    MISC,CB,LL,FI,DS,RU,RS,RF)),
             INTERVAL(5),
             PRINTAT(INTERVAL),
             FROM(,12:00),TO(,14:00),
             INCL(IMSID(IMSA,IMSB)))
IMSPALOG     EXECUTE
```

Related reference:

"Internal Resource Usage reports" on page 340
The Internal Resource Usage reports provide statistics on the use of various IMS pools and resources.

MSCLSTAT: MSC Link Statistics report

The MSCLSTAT operand of the IMSPALOG batch command requests the MSC Link Statistics report.

Format

```
IMSPALOG     MSCLSTAT(
            [DDNAME(ddname),]          default MSCLSTAT
            [PRINTAT(INTERVAL),]
            [GENERAL,]
            [SENDRECV,]
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(IMSID(list))|EXCL(IMSID(list))])
```

Report options are:

DDNAME
DDname for the report output. The default is MSCLSTAT

PRINTAT(*value*)

Specify one of the following values:

S or STOP
Print a report at the end of each run. This is the default.

I or INTERVAL
Print a report after each checkpoint.

Tip: Use PRINTAT(INTERVAL) only when the "Log Global Options" on page 425 are set to PRINTAT(STOP). Results may be unpredictable if multiple break conditions are specified.

GENERAL
The General Statistics report provides summary information on the overall usage of each MSC link.

SENDRECV
: The Send/Receive Statistics report provides summary information for each MSC link with a more detailed breakdown of Send and Receive traffic.

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on IMS subsystem ID.

Example

```
IMSPALOG     START(2018/06/01,),STOP(2018/06/02,)
IMSPALOG     MSCLSTAT(
             EXCL(IMSID(IMS9)))
IMSPALOG     EXECUTE
```

Related reference:

"MSC Link Statistics report" on page 343
The MSC Link Statistics report contains information on the use of MSC links from the X'4513' log record.

MSGQ: Message Queue Utilization report

The MSGQ operand of the IMSPALOG batch command requests the Message Queue Utilization report.

Format

```
IMSPALOG     MSGQ(
            [INTERVAL(nnn),]          default 10 bytes
            [ENQUEUE,]                default all
            [RECORD,]                 default complete records
            [DDNAME(ddname),]         default MQURDD
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(IMSID(list))|EXCL(IMSID(list))])
```

INTERVAL
: Record size interval, in bytes, to be reported on each line of the report.

ENQUEUE
: Report only messages that are enqueued.

RECORD
: Report individual records, not complete messages. This option may be used for shared queues where OBJAVGSZ is determined based on individual records, not complete messages which may span multiple records.

Other report options are:

DDNAME
: DDname for the report output. The default is `MQURDD`.

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on IMS subsystem ID.

Example

```
IMSPALOG     START(2018/06/01,),STOP(2018/06/02,)
IMSPALOG     MSGQ(
             INTERVAL(25),
             ENQUEUE,
             EXCL(IMSID(IMS9)))
IMSPALOG     EXECUTE
```

Related reference:

"Message Queue Utilization report" on page 345
The Message Queue Utilization report contains information on the use of message queues.

DBUPDATE: Database Update Activity report and extract

The DBUPDATE operand of the IMSPALOG batch command requests the Database Update Activity report.

Format

```
          IMSPALOG     DBUPDATE(
                      [PROGRAM,]                  default none
                      [DDNAME(ddname),]           default DBUADD
                      [FORMAT1,|FORMAT2,]          default FORMAT1
                      [FROM(date,time),]
                      [TO(date,time),]
                      [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
                      [INCL(IMSID(list))|EXCL(IMSID(list))])
          IMSPALOG     MAXBLOCK(nnnnn)            default 10000, max 32000
/*
//DBUAXTRO DD  DSN=database,update.activity.extract.dataset,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
```

The report options are:

PROGRAM
: Include the program name in the report, and order the report by database and program name.

  If PROGRAM is *not* specified, the report is ordered by database name only, and the program name is not reported.

DDNAME
: DDname for the recap report output. The default is DBUADD.

FORMAT1 **or** FORMAT2
: Report format. Reports generated using the FORMAT2 option provide a faster, more concise breakdown of database update activity. FORMAT2 is the recommended report option.

INCL **or** EXCL
: Selection criteria to filter (include or exclude) the report on Database or IMS subsystem ID.

MAXBLOCK
: The limit on the number of uncommitted block updates to track for this report.

To extract Database Update Activity details to an output file, specify an extract data set with ddname DBUAXTRO. You can specify global options XTRHEADING to include column headings in the extract file and XTRCOMMA to use a comma as the field delimiter.

Example

Taking defaults:

```
          IMSPALOG     DBUPDATE
          IMSPALOG     EXECUTE
```

Creating a FORMAT2 report:

```
IMSPALOG DBUPDATE(PROGRAM,FORMAT2)
IMSPALOG EXECUTE
```

With filtering and uncommitted block update limit:

```
IMSPALOG     DBUPDATE(
             PROGRAM,
             FORMAT2,
             EXCL(DATABASE(D*)),
             INCL(IMSID(A*,(M,Z))))
IMSPALOG     MAXBLOCK(12500)
IMSPALOG     EXECUTE
```

Related reference:

"Database Update Activity report and extract" on page 346
The Database Update Activity report can help you determine the cost of database calls. It indicates the number of purge writes at sync point time to a database and provides a count of actual updates made to each database in the time period being reported. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

HISTGRAM: Region Histogram (Log) report

The HISTGRAM operand of the IMSPALOG batch command requests the Region Histogram report.

Format

```
IMSPALOG     HISTGRAM([REGION (pst1,pst2,...)|
                       REGJBN(name1,name2,...),]
             [DDNAME(ddname),]          default HISTDD
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The report options are:

REGION
: List up to 13 Region (PST) IDs.

REGJBN
: List up to 13 Region Jobnames.

DDNAME
: DDname for the recap report output. The default is `HISTDD`.

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on IMS subsystem ID.

Examples

Taking defaults (the first 13 active regions in the report period):

```
IMSPALOG     HIST
IMSPALOG     EXECUTE
```

Report for regions 15 through 20, and 25:

```
IMSPALOG     HISTGRAM(REGION(15-20,25),
             FROM(2018/06/24,23:30),TO(2018/06/25,00:30))
IMSPALOG     EXECUTE
```

Related reference:

"Region Histogram report" on page 348
The Region Histogram report is a graphic display of region activity. It shows the times a region is active or idle and the patterns of transaction scheduling in each region.

SB: OSAM Sequential Buffering report

The SB operand of the IMSPALOG batch command requests the OSAM Sequential Buffering report.

Format

```
IMSPALOG     SB([ACTLOG,]
                [PROGSUM,]
             [DDNAME(ddname),]          default SBDD
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
             [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
```

One or both of the following reports may be requested:

ACTLOG
: Activity Log:
  - Sequential Buffering Summary for Region
  - SB Detail Statistics

PROGSUM
: OSAM SB Program (PSB) Summary

Other report options are:

DDNAME
: DDname for the recap report output. The default is SBDD.

INCL|EXCL
: Selection criteria to filter the report on Program, Database, or IMS subsystem ID.

Examples

Taking defaults:

```
IMSPALOG     SB
IMSPALOG     EXECUTE
```

Activity Log for two IMS Subsystems, excluding the SALES database:

```
IMSPALOG     SB(ACTLOG,
             FROM(2018/06/24,),TO(2018/06/25,),
             EXCL(DATABASE(SALES)),
             INCL(IMSID(IMSA,IMSB)))
IMSPALOG     EXECUTE
```

Related reference:

"OSAM Sequential Buffering report" on page 349
The OSAM Sequential Buffering report provides statistics on the usage of OSAM sequential buffers, by buffer pool and by PSB.

DEADLOCK: Deadlock report

The DEADLOCK operand of the IMSPALOG batch command requests the Deadlock report.

This report provides a comprehensive analysis of deadlock events, similar to DFSERA30. In addition the report summarizes deadlock activity to show at a glance:
- Associated winning transaction/database combinations
- Frequency of each losing transaction/database combination

The information provided is a useful aid for tuning applications and adjusting scheduling parameters to avoid this expensive overhead. Deadlocks involving DB2 are also reported.

Format

```
IMSPALOG      DEADLOCK(
                       [LIST,]
                       [SUMMARY,]
              [LISTDDN(ddname),]            default DEADLOCK
              [SUMMDDN(ddname),]            default DEADLOCK
              [FROM(date,time),]
              [TO(date,time),])
```

One or both of the following reports can be requested.

LIST List report

SUMMARY
: Summary report

Other report options are:

LISTDDN
: DDname for the list report output. The default is `DEADLOCK`.

SUMMDDN
: DDname for the summary report output. The default is `DEADLOCK`.

If both LIST and SUMMARY reports are selected, and their ddnames are the same, then only one report will be produced, containing both the List and Summary reports.

Examples

Taking defaults:

```
IMSPALOG     DEADLOCK
IMSPALOG     EXECUTE
```

Deadlock List report for a specified period:

```
IMSPALOG     DEADLOCK((LIST),
             LISTDDN(DEADLOCK),
             FROM(2018/06/24,),TO(2018/06/25,))
IMSPALOG     EXECUTE
```

Related reference:

"Deadlock report" on page 350
The Deadlock report provides a comprehensive analysis of deadlock events.

CHECKPOINT: System Checkpoint report

The CHECKPOINT operand of the IMSPALOG batch command requests the System Checkpoint report.

This report provides a detailed analysis of IMS internal checkpoint activity with details of your IMS resources, including:
- Databases, with system definition information
- Transactions, with system definition information and basic usage indicators
- Terminals, with system definition information and basic usage indicators

The report also provides a summary of checkpoint activity, including:
- Break-down of checkpoint records by type
- Frequency and overhead of internal checkpoint processing

Format

```
         IMSPALOG     CHECKPOINT(
                                 [DATABASE,]
                                 [TRANCODE,]
                                 [LTERM,]
                                 [PTERM,]
                                 [SUMMARY,]
                                 [EVENTS,]
                     [DDNAME(ddname),]           default CHECKPT
                     [FROM(date,time),]
                     [TO(date,time),])
                     [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
                     [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
                     [INCL(LTERM(list))|EXCL(LTERM(list)),]
                     [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
                     [INCL(LINETERM(list))|EXCL(LINETERM(list)),]
                     [INCL(IMSID(list))|EXCL(IMSID(list))])
SYSCKPT  DISTRIBUTION [LIMITS(value1,...,value9),]           Checkpoint Duration
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

Any combination of the following reports can be requested.

DATABASE
: Database Definitions.

TRANCODE
: Transaction Definitions.

LTERM
: Terminals, sorted by LTERM.

PTERM
: Terminals, sorted by PTERM.

SUMMARY
: Record Summary. This is always produced.

EVENTS
: Record Events. Print details of every checkpoint.

Note: VTAMNODE objects are either PTERM or NODE.

Other report options are:

DDNAME
: DDname for the report output. The default is `CHECKPT`.

INCL|EXCL
: Selection criteria to filter the report on Database, Transaction Code, LTERM, VTAM Node, Line/Terminal, or IMS subsystem ID.

Examples

Taking defaults:

```
IMSPALOG     CHECKPOINT
IMSPALOG     EXECUTE
```

Database and Transaction Definitions filtered by database and transaction code:

```
IMSPALOG     CHECKPOINT(DATABASE,TRANCODE,
             INCL(DATABASE(IPI*)),
             EXCL(TRANCODE(X*)))
IMSPALOG     EXECUTE
```

Related reference:

"System Checkpoint report" on page 351
The System Checkpoint report provides a detailed analysis of IMS internal checkpoint activity.

BMPCHKP: BMP Checkpoint report

The BMPCHKP operand of the IMSPALOG batch command requests the BMP Checkpoint report.

This report provides an analysis of BMP checkpoint frequency that can affect online performance and system restartability. The detailed List report provides a breakdown of individual BMP checkpoint activity. The Summary report provides an overview of each BMP program.

Format

```
IMSPALOG     BMPCHKP(
                     [LIST,]
                     [SUMMARY,]
             [DDNAME(ddname),]           default BMPCHKP
             [FROM(date,time),]
             [TO(date,time),])
             [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
             [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
```

One or both of the following reports can be requested.

LIST Detailed list report

SUMMARY
: Summary report (default)

Other report options are:

DDNAME
: DDname for the report output. The default is BMPCHKP.

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, Program, or IMS subsystem ID

Examples

Taking defaults:

```
IMSPALOG     BMPCHKP
IMSPALOG     EXECUTE
```

Summary report filtered by transaction code:

```
IMSPALOG     BMPCHKP(SUMMARY,
             EXCL(TRANCODE(CSB*)))
IMSPALOG     EXECUTE
```

Related reference:

"BMP Checkpoint report" on page 352
The BMP Checkpoint report provides an analysis of BMP checkpoint frequency that can affect online performance and system restartability.

GAP: Gap Analysis report

The GAP operand of the IMSPALOG batch command requests the Gap Analysis report.

This report looks for periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS to slow down.

Format

```
IMSPALOG     GAP([BYIMID|SYSPLEX|BOTH,]
             [THRESHOLD(s.thmiju),]      default 5 seconds
             [IGNORE(6D),]
             [DDNAME(ddname),]           default GAPS
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
```

Report options are:

BYIMID | SYSPLEX | BOTH

Select BYIMID to produce only the reports for each subsystem.

Select SYSPLEX to produce only the total system-wide report.

Select BOTH to produce one report for each subsystem followed by a total system wide report. This is the default.

Note: For log files with a single IMS subsystem, all report options are equivalent.

THRESHOLD

Threshold for the report output. The THRESHOLD defines the maximum elapsed time tolerated between records. Every gap longer than the threshold is reported.

The value of THRESHOLD must be within the range `0.000001` to `9.999999`. The default is `5.000000` seconds.

IGNORE(6D)

Exclude IMS x"6D" records from the Gap Analysis report. If using FDBR there is an x"6D" record written every 1 second which may distort the report. Default: all records are included if option not specified.

DDNAME

DDname for the report output. The default is `GAPS`.

FROM-TO

The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

INCL | EXCL
: Selection criteria to filter (include or exclude) the report on IMS subsystem ID.

Example

Taking defaults:

```
IMSPALOG     GAP
IMSPALOG     EXECUTE
```

Related reference:

"Gap Analysis report" on page 354
The Log Gap Analysis report contains information on periods of time where log records are not being cut, potentially highlighting an external system event that may have caused IMS to slow down.

COLDSTART: Cold Start Analysis report

The COLDSTART operand of the IMSPALOG batch command requests the Cold Start Analysis report.

This report provides a point-in-time snapshot of in-train activity, answering the following questions in the event of a cold start:

- What input messages (transactions) are lost?
- What are the incomplete units-of-work, and what database changes did they make?

Format

```
IMSPALOG     COLDSTART(
             [DDNAME(ddname),]          default COLDSTAR
             [FROM(date,time),]
             [TO(date,time),]
             [UOW,]
             [MSG,]
             [AT(date,time),]
             [DETAIL,]
             [SUMMARY])
```

Report options are:

DDNAME DDname for the report output. The default is COLDSTAR.

UOW DETAIL report only. Include all incomplete units of work with database update or ESAF activity.

MSG DETAIL report only. Include all messages enqueued but not dequeued.

AT(*date*,*time*)
: Default: If not specified, the report is produced at the end of the input log.

  Produce the Cold Start Analysis report at the specified *date* and *time*.

DETAIL Produce a report of all incomplete units of work (UOWs) with database update or ESAF activity, and messages enqueued but not dequeued.

SUMMARY
: Produce a report with counts by transaction code, database and external subsystem only.

Example

Taking defaults:

```
IMSPALOG     COLDSTART
IMSPALOG     EXECUTE
```

Related reference:

"Cold Start Analysis report" on page 355
The Cold Start Analysis report provides a point-in-time snapshot of in-train activity, answering the following questions in the event of a cold start: "What input messages (transactions) are lost?" and "What are the incomplete units-of-work, and what database changes did they make?"

Fast Path Transit reports

This section contains the operands for Fast Path Transit log reports.

Fast Path (EMH) Transit Options

These operands of the IMSPALOG command define general control information for the Fast Path Transit reports.

The Fast Path Transit reports are:
- Fast Path Transit Analysis
- Fast Path Transit Log
- Fast Path Transit Extract by Interval
- Fast Path Transaction Exception

Format

The format of the operands is as follows:

```
IMSPALOG    [FPPEAK(ppp),]         default 90 %
            [FPINTERVAL(nnnn),]     default 15 minutes
            [FPALIGN|FPNOALIGN,]
            [FPQUALIFY(INCL(TC(list))|
                       EXCL(TC(list)))]
```

FPPEAK
: Peak percentile

FPINTERVAL
: Time Interval in minutes

FPALIGN
: Align Time Interval to the even hour

FPNOALIGN
: Do not align Time Interval to the even hour

FPQUALIFY
: Transaction Codes to include or exclude

Example

Fast Path Transit Analysis and Log with peak transaction time percentage 95%, time interval 15 minutes, aligned to the hour.

```
IMSPALOG     START(2018/01/13,07:15),STOP(2018/01/13,09:30),
             INPUTDD(LOGIN),OUTPUTDD(RPTOUT),
             PAGESIZE(60),PRINTAT(STOP)
IMSPALOG     FPPEAK(95),
             FPINTERVAL(15),FPALIGN,
             FPQUALIFY(INCL(TC((DSFJ,DSFM),F*,K*,(MDB,MDK))))
IMSPALOG     FPANALYSIS(TRANCODE,TIME)
IMSPALOG     FPLOG
```

Related reference:

"Fast Path Transit Options" on page 357
The IMS PA Fast Path Transit Options define control information that applies to the Fast Path Transit Reports within the Report Set.

FPANALYSIS: Fast Path Transit Analysis report

The FPANALYSIS operand of the IMSPALOG batch command requests the Fast Path Transit Analysis report.

Format

```
IMSPALOG     FPANALYSIS([TRANCODE,]
                        [ROUTCODE,]
                        [USERID,]
                        [TIME,]
                        [ALL,]
                   [DDNAME(ddname),]      default FPTTRPT
                   [FROM(date,time),]
                   [TO(date,time),]
                   [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
                   [INCL(ROUTCODE(list))|EXCL(ROUTCODE(list)),]
                   [INCL(USERID(list))|EXCL(USERID(list))])
```

Any combination of the following reports can be requested. If all four reports are required, either specify the four report operands, or ALL.

TRANCODE
: By Transaction Code

ROUTCODE
: By Routing Code

USERID
: By User ID

TIME
: By Time of Input

ALL
: Produce all reports.

Other report options are:

DDNAME
: DDname for the recap report output. The default is `FPTTRPT`.

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, Routing Code, or IMS subsystem ID.

Example

Fast Path Transit Analysis by Transaction Code and by Time with report interval specified within global report interval, peak 95% (to check that 95% of transactions complete within a certain time), time interval 5 minutes, aligned to the hour, and filtering on Transaction Code.

```
IMSPALOG     START(2018/01/03,12:15),STOP(2018/01/04,12:15)
IMSPALOG     FPPEAK(95),FPINTERVAL(5),FPALIGN
IMSPALOG     FPANALYSIS(TRANCODE,
                        TIME,
                   FROM(2018/01/03,12:30),TO(2018/01/03,13:00),
                   INCL(TRANCODE((A,K),M*,P*)))
IMSPALOG     EXECUTE
```

Related reference:

"Fast Path Transit Analysis report" on page 359
The Fast Path Transit Analysis report can show response time performance by

transaction code, routing code, userid, and time of sync point.

FPLOG: Fast Path Transit Log report

The FPLOG operand of the IMSPALOG batch command requests the Fast Path Transit Log report.

Format

```
IMSPALOG     FPLOG(
            [DDNAME(ddname),]      default FPTTLOG
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list))])
```

Other report options are:

DDNAME
: DDname for the recap report output. The default is FPTTLOG.

INCL | EXCL
: Selection criteria to filter the report on Transaction Code.

Examples

Taking defaults:

```
IMSPALOG     FPLOG
IMSPALOG     EXECUTE
```

With report period and transaction code filtering:

```
IMSPALOG     FPLOG(
             FROM(2018/01/14,07:15:00:00),
             TO(2018/01/14,08:00:00:00),
             INCL(TRANCODE((M,ZZZZZZZZ))),
             DDNAME(FPTTLOG))
IMSPALOG     EXECUTE
```

Related reference:

"Fast Path Transit Log report" on page 360
The Fast Path Transit Log is a chronological listing of all IFP transactions processed during the reporting interval.

FPEXTRACT: Fast Path Transit Extract by Interval

The FPEXTRACT operand of the IMSPALOG batch command requests the Fast Path Transit Extract by Interval.

The extract processing merges previously extracted data in the input file, if it is specified, with data extracted in this run, and writes it to the output file. The output file contains records of data accumulated by time interval, for one or both of the following:

- Individual transaction codes within each time interval
- All transaction codes in each time interval

You need to extract the data at the level that you intend to export it.

The format of the extract data set is the same for both Message Queue and Fast Path transaction data, and if desired, both may reside in the same data set.

Format

```
          IMSPALOG     FPEXTRACT([TRANCODES,]
                                 [TCTOTALS,]
                        [DDNAME(ddname),]      default FPTTERPT
                        [FROM(date,time),]
                        [TO(date,time),]
                        [INCL(TRANCODE(list))|EXCL(TRANCODE(list))])
         [IMSPALOG     [FPALIGN|FPNOALIGN,]
                        [FPINTERVAL(nnnn)]]
          IMSPALOG     EXECUTE
/*
//IPIFPXTI DD  DSN=input.extract.file,DISP=SHR
//IPIFPXTO DD  DSN=output.extract.file,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
//             DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)
```

Any combination of the following extracts may be requested:

TRANCODES
: Accumulate data for each Transaction Code

TCTOTALS
: Accumulate data for Transaction Code totals

Other options are:

DDNAME
: DDname for the recap report output. The default is FPTTERPT.

INCL|EXCL
: Selection criteria to filter the report on Transaction Code.

FPALIGN
: Align Time Interval to the even hour.

FPNOALIGN
: Do not align Time Interval to the even hour.

FPINTERVAL
: Time Interval in minutes.

The input extract file IPIFPXTI is optional. The extract data set may be a generation data group (GDG).

Example

```
          IMSPALOG     START(,07:00:00:00),STOP(,10:30:00:00)
          IMSPALOG     FPINTERVAL(10),FPALIGN
          IMSPALOG     FPEXTRACT(TRANCODES,
                                 TCTOTALS,
                        DDNAME(FPTTERPT),
                        FROM(,07:30:00:00),TO(,09:30:00:00),
                        INCL(TRANCODE(T*)))
          IMSPALOG     EXECUTE
/*
//IPIFPXTI DD  DSN=IMSPA.EXTRACT.INFILE,DISP=SHR
//IPIFPXTO DD  DSN=IMSPA.EXTRACT.OUTFILE,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE),
//             DCB=(DSORG=PS,RECFM=VB,LRECL=4092,BLKSIZE=4096)
```

Related reference:

"Fast Path Transit Extract by Interval" on page 361
The Fast Path Transit Extract by Interval creates extracts by time interval of Fast Path transaction transit time data.

FPTRNEX: Fast Path Transaction Exception report and extract

The FPTRNEX operand of the IMSPALOG batch command requests the Fast Path Transaction Exception reports.

The report has four sections:

- Transaction Exception Detail Log, optionally with any combination of the following details:
  - DEDB Calls
  - Buffer Usage
  - VSO
  - Shared EMHQ
- Summary by Transaction
- Synchronization Failure Summary
- Recap, always produced at the end to summarize the report and extract processing

Format

```
         IMSPALOG     FPTRNEX([DETAIL,]
                              [CALLS,]
                              [BUFFER,]
                              [VSO,]
                              [SEMHQ,]
                              [SUMMARY,]
                              [SYNCFAIL,]
                         [OTHERFP,]
                         [EXPECT(expectation-set-name),]
                         [DDNAME(ddname),]           default FPTTXLOG
                         [FROM(date,time),]
                         [TO(date,time)])
         IMSPALOG     EXECUTE
/*
//IPIFXUT1 DD  DSN=total.traffic.dataset,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
//IPIFXUT2 DD  DSN=exeption.traffic.dataset,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
//IPIEXPQ  DD  DSN=expect.sets.dataset,DISP=SHR
```

Any combination of the following reports may be requested:

DETAIL
: Exception Detail Log

CALLS
: DEDB Calls

BUFFER
: Buffer Usage

VSO VSO

SEMHQ
: Shared EMHQ

SUMMARY
: Summary by Transaction Code

SYNCFAIL
: Sync Failure Summary

Other report options are:

OTHERFP
: Include non-IFP transactions in Exception reporting.

EXPECT
: Expectation Set (member name in the Expectation Sets data set).

DDNAME
: DDname for the recap report output. The default is SBDD.

An Expectation Set may be specified so the report and extracts can identify transactions performing outside "expectations". If omitted, all transactions are considered exceptions. IPIEXPQ is the ddname of the Expectation Sets data set.

Two extract data sets may be specified, to create the equivalent of the DBFULTA0 extract data sets:

- IPIFXUT1 Total Traffic data set contains detail records of all transactions
- IPIFXUT2 Exception Traffic data set contains only exception transactions

The Extract data sets may be GDGs.

Other report options are:

INCL | EXCL
: Selection criteria to filter the report on transaction code or IMS subsystem ID.

Example

```
         IMSPALOG     START(2018/01/15,),STOP(2018/01/15,)
         IMSPALOG     FPTRNEX(DETAIL,
                              SUMMARY,
                              SYNCFAIL,
                      EXPECT(EXPEXCPT))
         IMSPALOG     EXECUTE
/*
//IPIFXUT1 DD  DSN=IMSPA.V440.TOTAL.TRAFFIC,DISP=MOD
//IPIFXUT2 DD  DSN=IMSPA.V440.EXCEPT.TRAFFIC,DISP=(,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
//IPIEXPQ  DD  DSN=IMSPA.V440.EXPECTDS,DISP=SHR
```

Related reference:

"Fast Path Transaction Exception report and extract" on page 364
The Fast Path Transaction Exception reports provide detailed and summary information about IFP transactions, as well as message queue transactions that use Fast Path databases.

Fast Path Resource Usage reports

This section contains the operands for Fast Path Resource Usage log reports.

FPIRUC: Fast Path Resource Usage and Contention report

The FPIRUC operand of the IMSPALOG batch command requests the Fast Path Resource Usage and Contention report or the Fast Path Buffer Usage report or both.

Format

```
IMSPALOG     FPIRUC([BYIMID|SYSPLEX,]
            [RESUSAGE,]
            [BUFFER,]
            [RESDDN(ddname),]          default FPRUCRPT
            [BUFDDN(ddname),]          default FPBUFRPT
            [PEAK(nnn),]               default 90%
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list))])
```

One or both of the following reports can be requested:

RESUSAGE
: FP Resource Usage and Contention.

BUFFER
: FP Buffer Usage.

The content of each report can take one of three forms:

BYIMID
: One report for each IMS subsystem.

SYSPLEX
: The total system wide report.

not specified
: One report for each IMS subsystem followed by a total system wide report. This is the default.

Other report options are:

RESDDN
: DDname for the FP Resource Usage and Contention report output.

BUFDDN
: DDname for the FP Buffer Usage report output.

PEAK Peak percentile for the FP Buffer Usage report.

INCL|EXCL
: Selection criteria to filter the report on Transaction Code or IMS subsystem ID.

Example

Request both the FP Resource Usage and Contention report and the FP Buffer Usage report with peak percentile 85% and selection criteria.

```
IMSPALOG     START(2018/01/14,),STOP(2018/01/15,)
IMSPALOG     FPIRUC(RESUSAGE,BUFFER,
             RESDDN(FPRUCRPT),
             BUFDDN(FPBUFRPT),
             PEAK(85),
             INCL(TRANCODE(B*)),
             INCL(IMSID(IMSA)))
IMSPALOG     EXECUTE
```

Related reference:

"Fast Path Resource Usage and Contention report" on page 366
The Fast Path Resource Usage and Contention report provides detailed statistics on the Fast Path resources used by IFP transactions and non-IFP programs.

FPDBCALL: Fast Path Database Call Statistics report

The FPDBCALL operand of the IMSPALOG batch command requests the Fast Path Database Call Statistics report.

Format

```
IMSPALOG      FPDBCALL([BYIMID|SYSPLEX,]
             [DDNAME(ddname),]         default FPDBCRPT
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
IMSPALOG      EXECUTE
```

The content of each report can take one of three forms:

BYIMID
: One report for each IMS subsystem.

SYSPLEX
: The total system wide report.

not specified
: One report for each IMS subsystem followed by a total system wide report. This is the default.

Other report options are:

DDNAME
: DDname for the recap report output. The default is `FPDBCRPT`.

INCL|EXCL
: Selection criteria to filter the report on Transaction Code or IMS subsystem ID.

Example

```
IMSPALOG     FPDBCALL(
             DDNAME(FPDBCRPT),
             INCL(TRANCODE((A,K),M*)),
             INCL(IMSID(IMSA,IMSB)))
IMSPALOG     EXECUTE
```

Related reference:

"Fast Path Database Call Statistics report" on page 368
The Fast Path Database Call Statistics report provides a breakdown of DL/I call function codes by transaction code. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

FPRGNO: IFP Region Occupancy report

The FPRGNO operand of the IMSPALOG batch command requests the IFP Region Occupancy report.

Format

```
IMSPALOG      FPRGNO(
             [DDNAME(ddname),]         default FPRGORPT
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(REGION(list))|EXCL(REGION(list)),]
             [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
IMSPALOG      EXECUTE
```

Other report options are:

DDNAME
: DDname for the recap report output. The default is FPRGORPT.

FROM-TO
: The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

INCL | EXCL
: Selection criteria to filter the report on Region ID, Program, or IMS subsystem ID.

Example

```
IMSPALOG     START(,10:00),STOP(,14:30)
IMSPALOG     FPRGNO(
             FROM(,12:00),TO(,14:00),
             INCL(IMSID(IMSA,IMSB)))
IMSPALOG     EXECUTE
```

Related reference:

"IFP Region Occupancy report" on page 369
The IFP Region Occupancy Report provides approximate region occupancy rates for IFP regions.

FPEMHQ: EMH Message Statistics report

The FPEMHQ operand of the IMSPALOG batch command requests the EMH Message Statistics report.

Format

```
IMSPALOG     FPEMHQ(
            [DDNAME(ddname),]          default FPMSGRPT
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list))])
```

Report options are:

DDNAME
: DDname for the recap report output. The default is FPMSGRPT.

INCL | EXCL
: Selection criteria to filter the report on Transaction Code.

Example

```
IMSPALOG     START(2018/01/15,),STOP(2018/01/16,)
IMSPALOG     FPEMHQ(
             DDNAME(FPMSGRPT),
             EXCL(TRANCODE(IMS9)))
IMSPALOG     EXECUTE
```

Related reference:

"EMH Message Statistics report" on page 370
The EMH Message Statistics report contains information on the number and length of EMH messages that are processed by balancing groups and shared EMH queues.

FPDBUPD: DEDB Update Activity report

The FPDBUPD operand of the IMSPALOG batch command requests the DEDB Update Activity report.

Format

```
IMSPALOG     FPDBUPD([BYIMID|SYSPLEX,]
            [DDNAME(ddname),]          default FPDBURPT
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
            [INCL(AREA(list))|EXCL(AREA(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The content of the report can take one of three forms:

not specified
: One report for each IMS subsystem followed by a total system wide report. This is the default.

BYIMID
: One report for each IMS subsystem.

SYSPLEX
: The total system wide report.

Other report options are:

DDNAME
: DDname for the recap report output. The default is `FPDBURPT`.

INCL|EXCL
: Selection criteria to filter the report on Database, Area, or IMS subsystem ID.

Examples

Taking defaults:

```
IMSPALOG     FPDBUPD
IMSPALOG     EXECUTE
```

With filtering:

```
IMSPALOG     FPDBUPD(
             EXCL(DATABASE(D*)),
             INCL(IMSID(A*,(M,Z))))
IMSPALOG     EXECUTE
```

Related reference:

"DEDB Update Activity report" on page 371
The DEDB Update Activity report can help you determine the cost of DEDB database calls, and shows the rate of processing against your DEDB databases.

FPVSO: VSO Statistics report

The FPVSO operand of the IMSPALOG batch command requests the VSO Statistics report.

Format

```
IMSPALOG     FPVSO([BYIMID|SYSPLEX,]
            [DDNAME(ddname),]          default FPVSORPT
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
            [INCL(AREA(list))|EXCL(AREA(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The content of the report can take one of three forms:

BYIMID
: One report for each IMS subsystem.

SYSPLEX
: The total system wide report.

not specified
: One report for each IMS subsystem followed by a total system wide report. This is the default.

Other report options are:

DDNAME
: DDname for the recap report output. The default is `FPVSORPT`.

INCL | EXCL
: Selection criteria to filter the report on Database, Area, or IMS subsystem ID.

Examples

Taking defaults:

```
IMSPALOG     FPVSO
IMSPALOG     EXECUTE
```

For IMS subsystem `IMSA`, excluding the `SALES` database:

```
IMSPALOG     FPVSO(SYSPLEX,
             FROM(2018/01/14,),TO(2018/01/15,),
             EXCL(DATABASE(SALES)),
             INCL(IMSID(IMSA)))
IMSPALOG     EXECUTE
```

Related reference:

"VSO Statistics report" on page 373
The VSO Statistics report provides detailed statistics on VSO resource usage.

ATF Enhanced Summary reports

This section contains the operands for ATF Enhanced Summary log reports.

ATF Enhanced Summary Transit Options

These operands of the IMSPALOG command define general control information for the ATF Enhanced Summary reports.

The ATF Enhanced Summary reports and extract are:

- ATF Enhanced Summary Extract
- ATF Enhanced Summary Transaction Analysis
- ATF Enhanced Summary DLI Call Analysis
- ATF Enhanced Summary DB2 Call Analysis
- ATF Enhanced Summary MQ Call Analysis

Format

The format of the operands is as follows:

```
IMSPALOG    [ATFCODE(code),]       default A0
            [ATFEXCEPT]            default not present
```

ATFCODE
: The log record code of the OMEGAMON Application Trace Facility (ATF) Enhanced Summary records written to the IMS log.

ATFEXCEPT
: Process only transactions marked by ATF as matching defined ATF exception criteria. IBM OMEGAMON for IMS V5.5 introduced flags to identify these exceptions in APAR OI54667. If this option is selected and the ATF input is from a version prior to APAR OI54667, no records are selected.

Example

ATF Enhanced Summary Fast Path Transit Options with ATF log code set to A1, processing exception transactions only.

```
IMSPALOG     START(2018/01/13,07:15),STOP(2018/01/13,09:30),
             INPUTDD(LOGIN),OUTPUTDD(RPTOUT),
             PAGESIZE(60),PRINTAT(STOP),
             SETIMSID(DDNAME)
IMSPALOG     ATFCODE(A1),
             ATFEXCEPT
IMSPALOG     ATFEXTR(
             DELIMIT(','))
IMSPALOG     EXECUTE
```

ATFEXTR: ATF Enhanced Summary Extract

The ATFEXTR operand of the IMSPALOG batch command requests the ATF Enhanced Summary Extract.

The extract writes data from the ATF Enhanced Summary record to the output file. The output file contains an extract of the ATF Enhanced Summary record fixed part of the record. Optionally, you can create additional extracts for up to six repeating sections:

- DATABASE
- DLI DB
- DLI TM
- DB2
- MQ

- OTHER

The format of the extract data set is as follows.

Format

```
         IMSPALOG     ATFEXTR([LABELS,]
                              DELIMIT('char'),
                              [SECTIONS(
                              [DBD,]
                              [DLIDB,]
                              [DLITM,]
                              [DB2,]
                              [MQ,]
                              [OTHER])],
                              [INCL(TRANCODE(list))|EXCL(TRANCODE(list))]
                              [INCL(PROGRAM(list))|EXCL(PROGRAM(list))]
                              [INCL(DATABASE(list))|EXCL(DATABASE(list))]
                              [INCL(USERID(list))|EXCL(USERID(list))]
                              [INCL(IMSID(list))|EXCL(IMSID(list))])
         IMSPALOG     EXECUTE
/*
//ATFHEAD  DD  DSN=header.output.extract.file,DISP=SHR|OLD|MOD
[//ATFDBD   DD  DSN=database.output.extract.file,DISP=SHR|OLD|MOD]
[//ATFDLIDB DD  DSN=dlidb.output.extract.file,DISP=SHR|OLD|MOD]
[//ATFDLITM DD  DSN=dlitm.output.extract.file,DISP=SHR|OLD|MOD]
[//ATFDB2   DD  DSN=db2.output.extract.file,DISP=SHR|OLD|MOD]
[//ATFMQ    DD  DSN=mq.output.extract.file,DISP=SHR|OLD|MOD]
[//ATFOTHER DD  DSN=other.output.extract.file,DISP=SHR|OLD|MOD]
```

The report options are:

LABELS
: Include field labels in the extract

DELIMIT
: The character to use to separate fields in the extract

SECTIONS
: The sections for which to produce extracts. Every extract includes the header extract. SECTIONS specifies which other sections to extract.

INCL | EXCL
: Selection criteria to filter the report on transaction code, program, database, user ID or IMS subsystem ID.

Example

```
    IMSPALOG START(2018/01/13,10:00:00:00),STOP(2018/01/14,11:00:00:00)
  * ATF Enhanced Summary Transit Options
  *   OMEGAMON ATF Enhanced Summary log code - A0
  *   Process Exception transactions only
            IMSPALOG     ATFCODE(A2),
                         ATFEXCEPT
  * ATF Enhanced Summary Extract
  *   ATFHEAD  - extract DSN - 'ABC.IMSPA.HEAD1.CSV'
  *   Delimiter - ,
            IMSPALOG     ATFEXTR(
                         DELIMIT(','))
            IMSPALOG     EXECUTE
 /*
```

Loading the extract to DB2

DB2 load samples are provided in the SIPISAMP library. These define a sample DB2 database and tables for the ATF data. DB2 load utility samples are also provided to load the ATF CSV data into this DB2 database. The sample members are as follows:

Table 5. SIPISAMP DB2 Load Samples

Member	Description
IPIESDDL	DDL framework to define the DB2 database and tables
IPIESLD	HEADER table load framework
IPIESLD1	DBD table LOAD framework
IPIESLD2	DLIDB table LOAD framework
IPIESLD3	DLITM table LOAD framework
IPIESLD4	DB2 table LOAD framework
IPIESLD5	MQ table LOAD framework
IPIESLD6	OTHER table LOAD framework

ATFANALYSIS: ATF Enhanced Summary Transaction Analysis report

The ATFANALYSIS operand of the IMSPALOG batch command requests the ATF Enhanced Summary Transaction Analysis report.

Format

```
IMSPALOG     ATFANALYSIS([LIST],
                         [SUMMARY,]
                         [DATABASE,]
             LISTDDN(ddname),          default ATFTRNLS
             SUMMDDN(ddname),          default ATFTRNSM
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
             [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
             [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
             [INCL(USERID(list))|EXCL(USERID(list)),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
```

You can request a list or summary report, and optionally make those reports show performance by database.

LIST

- When the DATABASE suboperand is not specified, transactions are listed with elapsed time and CPU time.
- When the DATABASE suboperand is specified, transactions are listed by database, with DLI Gets and Updates separated into call counts, elapsed time, and CPU time.

SUMMARY

- When the DATABASE suboperand is not specified, transactions are summarized by program, with elapsed time and CPU time separated into different categories.

- When the DATABASE suboperand is specified, database usage is summarized showing call counts, elapsed time, and CPU time for DLI Reads and separately for DLI Updates.

DATABASE

The DATABASE suboperand changes the type of List or Summary report so that it shows performance by database.

Other report options are:

LISTDDN

DDname for the list report output. The default value is `ATFTRNLS`.

SUMMDDN

DDname for the summary report output. The default value is `ATFTRNSM`.

INCL | EXCL

Selection criteria to filter (include or exclude) the report on transaction code, program, database, user ID, or IMS subsystem ID.

Example

ATF Enhanced Summary Transaction Analysis, list and summary reports by database, and filtering on transaction code.

```
IMSPALOG     ATFCODE(A0)
IMSPALOG     ATFANALYSIS(
             LIST,
             SUMMARY,
             DATABASE,
             LISTDDN(ATFTRNLS),
             SUMMDDN(ATFTRNSM),
             INCL(TRANCODE(TRAN1)))
IMSPALOG     EXECUTE
```

ATFDLICALL: ATF Enhanced Summary DLI Call Analysis report

The ATFDLICALL operand of the IMSPALOG batch command requests the ATF Enhanced Summary DLI Call Analysis report.

Format

```
IMSPALOG     ATFDLICALL(
             [LIST,]
             [SUMMARY,]
             [DATABASE,]
             LISTDDN(ddname),         default ATFDLILS
             SUMMDDN(ddname),         default ATFDLISM
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
             [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
             [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
             [INCL(USERID(list))|EXCL(USERID(list)),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
```

You can request a list or summary report, and optionally make the summary report show DLI activity by database.

LIST

Within each transaction, DLI activity is reported by database and call type. Whether the DATABASE suboperand is specified has no effect.

SUMMARY

- When the DATABASE suboperand is not specified, DLI activity is summarized by transaction, with DLI call counts, average elapsed time and CPU time.
- When the DATABASE suboperand is specified, DLI activity is summarized by database, with DLI call counts, average elapsed time and CPU time.

DATABASE

The DATABASE suboperand changes the type of Summary report so that it shows DLI activity by database.

Other report options are:

LISTDDN

DDname for the list report output. The default value is `ATFDLILS`.

SUMMDDN

DDname for the summary report output. The default value is `ATFDLISM`.

INCL|EXCL

Selection criteria to filter (include or exclude) the report on transaction code, program, database, user ID, or IMS subsystem ID.

Example

ATF Enhanced Summary Transaction Analysis, showing List and Summary reports by database, and filtering on transaction code.

```
IMSPALOG     ATFCODE(A0)
IMSPALOG     ATFDLICALL(
             LIST,
             SUMMARY,
             DATABASE,
             LISTDDN(ATFDLILS),
             SUMMDDN(ATFDLISM),
             INCL(TRANCODE(TRAN1)))
IMSPALOG     EXECUTE
```

ATFDB2CALL: ATF Enhanced Summary DB2 Call Analysis report

The ATFDB2CALL operand of the IMSPALOG batch command requests the ATF Enhanced Summary DB2 Call Analysis report.

Format

```
IMSPALOG     ATFDB2CALL(
             [LIST,]
             [SUMMARY,]
             LISTDDN(ddname),         default ATFDB2LS
             SUMMDDN(ddname),         default ATFDB2SM
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
             [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
             [INCL(USERID(list))|EXCL(USERID(list)),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
```

You can request a list or summary report.

LIST The List report shows DB2 activity within transaction by SQL call type, including call count, elapsed time and CPU time.

SUMMARY
The Summary report shows DB2 activity summarized by transaction and SQL call type, including call count, elapsed time, and CPU time.

Other report options are:
LISTDDN
DDname for the list report output. The default value is ATFDB2LS.
SUMMDDN
DDname for the summary report output. The default value is ATFDB2SM.
INCL | EXCL
Selection criteria to filter (include or exclude) the report on transaction code, program, user ID, or IMS subsystem ID.

Example

ATF Enhanced Summary DB2 Call Analysis, showing List and Summary reports, and filtering on transaction code.

```
IMSPALOG     ATFCODE(A0)
IMSPALOG     ATFDB2CALL(
             LIST,
             SUMMARY,
             LISTDDN(ATFDB2LS),
             SUMMDDN(ATFDB2SM),
             INCL(TRANCODE(TRAN1)))
IMSPALOG     EXECUTE
```

ATFMQCALL: ATF Enhanced Summary MQ Call Analysis report

The ATFMQCALL operand of the IMSPALOG batch command requests the ATF Enhanced Summary MQ Call Analysis report.

Format

```
IMSPALOG     ATFMQCALL(
             [LIST,]
             [SUMMARY,]
             LISTDDN(ddname),         default ATFMQLS
             SUMMDDN(ddname),         default ATFMQSM
             [FROM(date,time),]
             [TO(date,time),]
             [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
             [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
             [INCL(USERID(list))|EXCL(USERID(list)),]
             [INCL(IMSID(list))|EXCL(IMSID(list))])
```

You can request a list or summary report.
LIST The List report shows MQ activity within transaction by call type, showing elapsed time and CPU time.
SUMMARY
The Summary report shows MQ activity summarized by transaction and call type, including call count, and average elapsed time and CPU time.

Other report options are:
LISTDDN
DDname for the list report output. The default value is ATFMQLS.
SUMMDDN
DDname for the summary report output. The default value is ATFMQSM.

INCL | EXCL
: Selection criteria to filter (include or exclude) the report on transaction code, program, user ID, or IMS subsystem ID.

Example

ATF Enhanced Summary DB2 Call Analysis, showing List and Summary reports, and filtering on transaction code.

```
IMSPALOG     ATFCODE(A0)
IMSPALOG     ATFMQCALL(
             LIST,
             SUMMARY,
             LISTDDN(ATFMQLS),
             SUMMDDN(ATFMQSM),
             INCL(TRANCODE(TRAN1)))
IMSPALOG     EXECUTE
```

Trace reports

This section contains the operands for Trace log reports.

DCTRACE: DC Queue Manager Trace report

The DCTRACE operand of the IMSPALOG batch command requests the DC Queue Manager Trace report.

Format

```
IMSPALOG     DCTRACE(
            [LTERM,]
            [TRACKING,[UTCLOCAL|UTCGMT,]]
            [SAMEUOW,]
            [TEXTALL,]
            [DDNAME(ddname),]          default DCTRDD
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(LINETERM(list))|EXCL(LINETERM(list)),]
            [INCL(LTERM(list))|EXCL(LTERM(list)),]
            [INCL(VTAMNODE(list))|EXCL(VTAMNODE(list)),]
            [INCL(LOGCODES(list))|EXCL(LOGCODES(list)),]
            [INCL(MSGID(list))|EXCL(MSGID(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list))])
```

You can request any combination of the following options:

LTERM
: Print LTERM name, instead of Line or VTAM Node name

TRACKING
: Print DC UOW Tracker report

UTCLOCAL
: For DC UOW Tracker: Convert UTC time stamp to local time

UTCGMT
: For DC UOW Tracker: Report UTC as it appears in the log record (GMT)

SAMEUOW
: Print complete transactions (all messages), regardless of filtering

TEXTALL
: Print entire message text; otherwise only the first part to fit on one line is printed

Other report options are:

DDNAME
: DDname for the recap report output. The default is DCTRDD.

INCL|EXCL
: Selection criteria to filter the report on Line/Terminal, LTERM, VTAM Node, Log Record Code, Message ID, User ID, or IMS subsystem ID.

  Tip: When specifying selection criteria for Message IDs less than 8 characters (for example, transaction codes), append * to extend the length of the field to 8 characters.

Examples

Taking defaults:

```
IMSPALOG     DCTRACE
IMSPALOG     EXECUTE
```

Report for terminals 2 and 5 on line 10; exclude log records 01, 32, 34, and 39:

```
IMSPALOG     DCTRACE(INCL(LINETERM(10/2,10/5)),
                     EXCL(LOGCODES(01,32,34,39)))
IMSPALOG     EXECUTE
```

Report for transaction code TR1:

```
IMSPALOG     DCTRACE(INCL(MSGID(TR1*)), SAMEUOW, TRACKING, UTCGMT)
IMSPALOG     EXECUTE
```

Related reference:

"DC Queue Manager Trace report" on page 383
The DC Queue Manager Trace report provides a record of all DC-related activity for the specified time period.

DBTRACE: Database Trace report

The DBTRACE operand of the IMSPALOG batch command requests the Database Trace (Full Function) report.

Format

```
IMSPALOG     DBTRACE([INCLUDE(DB),]    database information only
                     [EXCLUDE(TC),]    database open/close only
                [DDNAME(ddname),]          default DBTRDD
                [FROM(date,time),]
                [TO(date,time),]
                [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
                [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
                [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
                [INCL(KEY(list))|EXCL(KEY(list)),]
                [INCL(BLOCKID(list))|EXCL(BLOCKID(list)),]
                [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The content of the report can take one of three forms, with different filtering options available for each:

INCLUDE(DB)
: Database information only, with filtering on Key, Block ID, IMS Subsystem ID.

EXCLUDE(TC)
: Database Open/Close only, with filtering on IMS Subsystem ID.

not specified
: Database with transaction oriented information, with filtering on Transaction Code, Database, Key, Block ID, IMS Subsystem ID. This is the default.

Other report options are:

DDNAME
: DDname for the recap report output. The default is `DBTRDD`.

INCL|EXCL
: Selection criteria to filter the report on Transaction Code, Database, Program, Key, Block ID, or IMS subsystem ID.

Examples

Taking defaults:

```
IMSPALOG     DBT
IMSPALOG     EXECUTE
```

Report for the time period 3:00 p.m. to 5:00 p.m. for records with keys of `BLD` and `DRF` in the `PARTFILE` database:

```
IMSPALOG     DBTRACE(
             FROM(,15:00),TO(,17:00),
             INCL(DATABASE(PARTFILE)),
             INCL(KEY(BLD,DRF)))
IMSPALOG     EXECUTE
```

Related reference:

"Database Trace report" on page 385
The Database Trace report provides a record of all database changes by application programs as recorded on the IMS log. If your database is a HALDB, you can also report on specific HALDB partitions because the name of the partition is found on the database name field of the various records used in this report.

FPDBTRC: DEDB Update Trace report

The FPDBTRC operand of the IMSPALOG batch command requests the DEDB Update Trace report.

Format

```
IMSPALOG     FPDBTRC([DEDBONLY|OPENCLOSE,]
            [DDNAME(ddname),]          default FPDBUTRC
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(REGION(list))|EXCL(REGION(list)),]
            [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(DATABASE(list))|EXCL(DATABASE(list)),]
            [INCL(AREA(list))|EXCL(AREA(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The content of the report can take one of three forms:

DEDBONLY
: DEDB information only.

OPENCLOSE
: DEDB Open/Close only.

not specified
: DEDB information including related sync point entries. This is the default.

Other report options are:

DDNAME
: DDname for the recap report output. The default is `FPDBUTRC`.

INCL|EXCL
: Selection criteria to filter the report on Region ID, Program (PSB), User ID, Database, Area, or IMS subsystem ID.

Examples

Taking defaults:

```
IMSPALOG     FPDBTRC
IMSPALOG     EXECUTE
```

Report for the time period 3 p.m. to 5 p.m. for records in the `PARTFILE` database:

```
IMSPALOG     FPDBTRC(
             FROM(,15:00),TO(,17:00),
             INCL(DATABASE(PARTFILE)))
IMSPALOG     EXECUTE
```

Related reference:

"DEDB Update Trace report" on page 386
The DEDB Update Trace report provides a record of all DEDB changes by application programs as recorded on the IMS log.

ESAF: ESAF Trace report

The ESAF operand of the IMSPALOG batch command requests the External Subsystem Statistics report.

Format

```
IMSPALOG     ESAF(
            [DDNAME(ddname),]          default ESAFDD
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(ES(list))|EXCL(ES(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list))])
```

The report options are:

DDNAME
: DDname for the recap report output. The default is `ESAFDD`.

INCL|EXCL
: Selection criteria to filter the report on External subsystem ID or IMS subsystem ID.

Example

Taking defaults:

```
IMSPALOG     ESAF
IMSPALOG     EXECUTE
```

For External Subsystems SYST and XSYS, and IMS Subsystem IMSA:

```
IMSPALOG     ESAF(
             INCL(ES(SYST,XSYS)),
             INCL(IMSID(IMSA)))
IMSPALOG     EXECUTE
```

User-written reports

This section contains the operands for user-written log reports.

USERPGM: User-Written Record Processors

The USERPGM operand of the IMSPALOG batch command requests that a user-written program is to be run.

Format

```
IMSPALOG     USERPGM(program-name,
            [DDNAME(ddname),]          default program name
            [FROM(date,time),]
            [TO(date,time),]
            [CODES('list'),]           include log record codes
            [INCL(object-label(list))|
             EXCL(object-label(list))])
```

Up to 21 user-written programs can be specified in the one job.

The operands for the four user programs provided by IMS PA have the following format.

Note: User programs supplied with IMS PA have been superseded by the following reports:

- "DEADLOCK: Deadlock report" on page 458
- "CHECKPOINT: System Checkpoint report" on page 459
- "TRANRESU: Transaction Resource Usage report" on page 448

```
IMSPALOG     USERPGM(IPIPU1xx),  where xx is IMS version and release 1
            [FROM(date,time),]
            [TO(date,time),]
            [DDNAME(ddname),]          default IPIPUP1xx
            [INCL(TRAN(list))|EXCL(TRAN(list))])         Object type TRAN

IMSPALOG     USERPGM(IPIPPGM2, 2
            [INCL(STATS(statistics-list)),]
            [FROM(date,time),]
            [TO(date,time),]
            [DDNAME(ddname),]          default IPIPPGM2
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),] Object type TRAN
            [INCL(REGION(list))|EXCL(REGION(list)),]     Object type RGPST
            [INCL(REGJBN(list))|EXCL(REGJBN(list))])     Object type RGJOB

IMSPALOG     USERPGM(IPIPU9xx),  where xx is IMS version and release 3
            [FROM(date,time),]
            [TO(date,time),]
            [DDNAME(ddname)]           default IPIPPGM9

IMSPALOG     USERPGM(IPIERA30,
            [FROM(date,time),]
            [TO(date,time),]
            [DDNAME(ddname))]          default SNAPTRAC
```

1 Specify the desired version of IMS by replacing the program name with one of the following:

IPIU1C1
For IMS V12

IPIU1D1
For IMS V13

IPIU1E1
For IMS V14

IPIU1F1
For IMS V15

2

The IPIPPGM2 *statistics-list* allows a breakdown of transaction resource usage by up to 4 statistics. Any combination of the following may be specified:

DB DB Call statistics
DC DC Call statistics
DLI Other DL/I Call statistics
ENQ Enqueue statistics

3 Specify the desired version of IMS by replacing the program name with one of the following:

IPIU9C1
For IMS V12

IPIU9D1
For IMS V13

IPIU9E1
For IMS V14

IPIU9F1
For IMS V15

Other report options are:
INCL|EXCL
Selection criteria to filter the report on transaction code or IMS subsystem ID. Up to five INCLUDE or EXCLUDE qualifiers can be specified for each program.

Example

Two supplied user programs:

```
IMSPALOG     USERPGM(IPIPU1F1,
             FROM(,10:00:00:00),TO(,18:00:00:00),
             DDNAME(PGM1DD),
             INCL(TRAN((A,K),M*)))
IMSPALOG     USERPGM(IPIPPGM2)
IMSPALOG     EXECUTE
```

Related reference:

"User-written reports" on page 389
IMS PA supports up to 21 user-written reports in each Report Set. These can be activated for execution together with other reports in the Report Set in a similar manner to the supplied log reports.

"User programs" on page 749
The sample library SIPISAMP contains members with sample user programs that can run under IMS PA and associated JCL.

Log Information report

This section contains the operands for the Log Information report.

LOGINFO: Log Information report

The Log Information report provides a breakdown of the log record types in the input IMS log files. The LOGINFO operand allows users to produce a stand-alone Log Information report without running a report set. This is a batch-only command and is not generated by an IMS PA dialog.

Format

```
IMSPALOG    LOGINFO
```

LOGINFO
Generate a Log Information report. The ddname for the report is LOGINFO.

Example

```
//IPICMD DD *
* IMSPALOG LOGINFO
* IMSPALOG EXEC
/*
```

Related reference:

"Log Information report" on page 407
The Log Information report provides a breakdown of the log record types in the input IMS log files. It shows record count, length, rates per second, and volume. Selected record types are broken down further to provide additional information

about transaction arrival and processing throughput.

Part 6. Monitor reporting

IMS Performance Analyzer provides both an online dialog and a batch interface. This part describes how to request and run Monitor reports using the dialog and batch commands.

Chapter 22. Requesting Monitor reports

You can use the IMS PA ISPF dialog to specify and request reports generated from IMS Monitor or DB Monitor data.

Monitor Report Sets

Monitor reports are specified in a Report Set of type **MON**.

Report Sets are stored in a Reports Sets data set. If you have not specified a Report Sets data set, IMS PA will allocate a data set for you with default characteristics. To change the Report Sets data set, you can use **Options** in the action bar or option 0.4 **IMS PA Control Data Sets** from the IMS PA primary option menu.

To invoke the panel to specify Monitor Reports:

1. Select option 3 **Report Sets** from the IMS PA primary option menu. A list of the Report Sets in the nominated Report Sets data set is displayed.
2. Define a new Monitor Report Set or edit an existing one using line action **S**. See "Maintaining Report Sets" on page 125 for information on how to do this.

```
 File  View  Options  Help
──────────────────────────────────────────────────────────────────────────────
                              Report Sets                   Row 1 to 6 of 6
Command ===> ____________________________________________ Scroll ===> PAGE

Report Sets Data Set . . . : USER.IMSPA.RSET

/     Name    Type           Description               Changed        ID
___   SAMPLOG  LOG  Sample Log Report Set           2018/07/17 12:02 USER
___   SAMPMON  MON  Sample Monitor Report Set       2018/07/02 14:22 USER
****************************** Bottom of data ********************************
```

Figure 234. Selecting a Monitor Report Set

A panel is then displayed for you to view or modify the description of the Report Set and the reports it contains. Figure 235 on page 492 shows the sample Monitor Report Set which IMS PA provides if there are no user-defined Report Sets in the Report Set data set.

```
  File  View  SysDefs  Options  Help
-------------------------------------------------------------------------------
EDIT                      Report Set - SAMPMON                    Line 1 of 39
Command ===> ____________________________________________________ Scroll ===> PAGE

Description . . . Sample Monitor Report Set

Enter "/" to select action.

___           ** Reports **                              Active
    -  ___    Options                                      Yes
              ___  Monitor Global                          Yes
              ___  Transactions by Time Period             No
              ___  Application Grouping                    No
              ___  DDname Grouping                         No
              ___  ESAF Integration                        No
              ___  Alternate Sequencing                    No
    -  ___    Region Activity Summary Reports              Yes
              ___  Schedule Transaction                    Yes
              ___  Region                                  Yes
              ___  Program (PSB)                           Yes
              ___  Database IWAIT                          Yes
    -  ___    Region Activity Analysis Reports             No
              ___  Region Analysis                         No
              ___  Application Detail                      No
              ___  Database IWAIT Analysis                 No
              ___  Performance Exceptions                  No
              ___  Enqueue/Dequeue Trace                   No
              ___  Region Histogram                        No
    -  ___    System Analysis Reports                      Yes
              ___  Total System IWAIT                      Yes
    -  ___    Program Analysis Reports                     No
              ___  Program Activity Detail                 No
              ___  Program Trace                           No
              ___  Batch VSAM Statistics                   No
    -  ___    Resource Usage Reports                       Yes
              ___  Buffer Pool & Latch Statistics          Yes
              ___  Communication                           No
              ___  MSC                                     No
              ___  ESAF                                    No
              ___  Synchronous Callout                     No
    -  ___    Fast Path Analysis Reports                   No
              ___  DEDB Resource Contention                No
              ___  Fast Path Buffer Statistics             No
              ___  BALG/Shared EMHQ Analysis               No
              ___  OTHREAD Analysis                        No
              ___  VSO Summary                             No
    -  ___    Monitor Data Analysis Report                 No
              ___  Monitor Record Trace                    No
              ** End of Reports **
```

Figure 235. Edit Monitor Report Set

The Report Set panels show the list of all available monitor reports options in a tree structure. See “Report Set menu tree” on page 123 for a description of the tree structure.

Each report can be activated (**Active** column value Yes) or deactivated (No). If any changes are made to a report, the dialog will mark the report as active automatically. Each Report Category can be activated or deactivated. Only active reports in active report categories are included in the Report Set at submit time. A Report Set can be submitted for processing only if there is at least one active report in an active report category.

However, you can also use the **RUN** line action to temporarily override the inactive status of a report or report category.

Line actions

The line actions that you can enter on the Monitor Report Set panel depend on the type of item that you enter the line action next to.

The available line actions depend on whether they are acting on either:
- The top of the Report Set menu tree (whole of Report Set)
- The Options Category
- A Report Category
- The Global Options
- Other Options
- A Report

** Reports **

The available line actions for `** Reports **` at the top of the menu tree are:

/ Display the menu of line actions.

S Expand all categories that are not already expanded, or collapse all categories if they are all expanded.

A Activate all categories that contain one or more active reports. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.

AA Activate all categories, all reports, all options.

D Deactivate all categories. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.

DD Deactivate all categories, all reports, all options.

RUN Also **R**. Run the report category. Run-time options will display.

Options Category

The available line actions for the Options Category are:

/ Display the menu of line actions.

S Expand or Collapse the options category.

AA Activate all the options within the category. The category is automatically active.

DD Deactivate all the options within the category, except the Monitor Global Options. The category is automatically active if Monitor Global is active. It cannot be explicitly activated or deactivated.

Global Options

The Monitor Global Options can be edited by selecting with line action **S**. They cannot be explicitly activated or deactivated.

Other Options

The other options are: Transactions by Time Period, Application Grouping, DDname Grouping, ESAF Integration, Alternate Sequencing. The available line actions for these options are:

/ Display the menu of line actions.

S Select (Edit) the options. Not available for ESAF Integration.

A Activate the option (sets the **Active** column value to `Yes`). Alternatively, you can type `Y` in the **Active** column.

D Deactivate the option (sets the **Active** column value to `No`). Alternatively, you can type `N` in the **Active** column.

Report Categories

The available line actions for a Report Category are:

/ Display the menu of line actions.

S Expand or Collapse the report category.

A Activate the report category (sets the **Active** column value to `Yes`). Alternatively, you can type `Y` in the **Active** column. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.

AA Activate the report category and all the reports and options within it.

D Deactivate the report category (sets the **Active** column value to `No`). Alternatively, you can type `N` in the **Active** column. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.

DD Deactivate the report category and all the reports and options within it.

RUN Also **R**. Run the report category. Run-time options will display.

Reports

The available line actions for a report are:

/ Display the menu of line actions.

S Select (Edit) the report. Not available for the Region Activity Summary Reports as they have no specific report-level options.

A Activate the report (sets the **Active** column value to `Yes`). Alternatively, you can type `Y` in the Active column.

D Deactivate the report (sets the **Active** column value to `No`). Alternatively, you can type `N` in the Active column.

RUN Also **R**. Run the report. Run-time options will display.

RUN command

The RUN command runs the Report Set and prompts you for entry of runtime options, such as System Selection and Report Interval, before generating the JCL.

SUB, JCL, and JCM are special RUN requests that preset the Execution Mode (see Figure 237 on page 496) and allow you to bypass the runtime prompt:

- The SUBMIT or SUB command directly submits the Report Set for execution.
- The JCL command builds the JCL to execute the Report Set and allows you to edit the job before you submit it or save it in your JCL library.
- The JCLCMD or JCM command builds the JCL, converts the Report Set to a command stream, and allows you to edit the job before you submit it or save it in your JCL library.

The RUN command does not reset the Execution Mode. For example, if you SUB a Report Set, the Execution Mode is set to 1. If next time you RUN a Report Set, the Execution Mode will default to 1.

RUN is also available as a line action to run individual reports or report categories and override the Active status. When entered as a line action, only Execution Mode 3 is available. **SUB**, **JCL**, and **JCM** can be entered as a line action, however in this case they act the same as the **RUN** line action.

Specifying report options

The IMS PA dialog stores the report options that you specify in the Report Sets data set.

The remainder of this chapter describes the report options in terms of the dialog panels and fields. For additional information about the report options and examples of the reports, see the chapter "Analyzing Monitor reports" in the *IMS Performance Analyzer for z/OS: Report Reference.*

Saving your changes

If an active report is deactivated, its specified options are retained. To return to the default options for a report, Edit the report in the Report Set, then select **File** > **Reset To Defaults** from the action bar or enter DEFAULTS on the command line. To return to the default value for a single field (excluding flags, selection fields, or fields in a dependent set), just erase the value in the field.

Any changes to a Report Set's options and activated reports are saved *only* by issuing a SAVE, SAVEAS, or EXIT (F3) command from the EDIT Report Set panel.

Note: Exit (**F3**) discards changes if **Automatic Save on Exit** in your IMS PA Profile Options is set to `NO`.

Saving of changes made on a subordinate panel is as follows:

- If **Exit** (**F3**) from the subpanel, then changes are retained pending SAVE, SAVEAS, or EXIT (F3) from the EDIT Report Set panel.
- If **Cancel** (**F12**) from the subpanel, then changes just entered on the subpanel are discarded.

Run Monitor Report Set

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

About this task

One way to do this is shown in “Running Report Sets” on page 127.

```
  File  View  Options  Help
──────────────────────────────────────────────────────────────────────────────
                                Report Sets                    Row 1 to 2 of 2
Command ===> ____________________________________________________ Scroll ===> PAGE

Report Sets Data Set . . . . : IMSPA.RSET

/     Name    Type           Description                Changed        ID
___  SAMPLOG  LOG  Sample Log Report Set            2018/07/17 12:02 IMSPA
RUN  SAMPMON  MON  Sample Monitor Report Set        2018/07/02 14:22 IMSPA
****************************** Bottom of data ********************************
```

Figure 236. Run a Monitor Report Set to generate reports

Before IMS PA generates the JCL, the Run Report Set panel is displayed to prompt you to specify runtime options. You can request to bypass this prompt, except in the following circumstances:

- When the RUN command is used. The prompt for runtime options can only be bypassed if SUB, JCL, or JCM commands are used.
- When a Report Interval is specified.

```
  File  SysDefs  Options  Help
──────────────────────────────────────────────────────────────────────────────
                        Run Report Set SAMPMON
Command ===> ____________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                    ──── Report Interval ──────
 System . . . ________  +                 YYYY/MM/DD  HH:MM:SS:TH
                                     From __________  ____________
                                     To   __________  ____________

Execution Mode:                      Unresolved Data Sets Options:
2  1. Submit Report Set              1  1. Issue error message
   2. Edit JCL before submit            2. Edit unresolved JCL
   3. Edit JCL with command input
                                     Enter "/" to select option
                                     _  Bypass run-time options prompt
```

Figure 237. Run Monitor Report Set

Specify your desired runtime options. When the specification is complete, press Enter to proceed with JCL generation.

The options on the Run Report Set panel are:

System Selection
: Specify the IMS Subsystem to run the Report Set against. IMS PA includes in the JCL the monitor data sets specified for this subsystem.

  You can type the IMSID or press **Prompt** (**F4**) to select one from a list of available IMS subsystems.

If you want to change your system specification, you can link there by selecting **SysDefs** in the action bar, then select 1 from the pull-down menu:

```
1  1. System Definitions
   2. Groups
```

Report Interval

Defaults: None first time, thereafter as previously set.

Specify a date/time range. The date/time fields are optional, but if specified, they override at run time the Global Report Interval specified within the Report Set.

Date can be either an actual date specification with the same edit rules as the Global Report Interval (see "Monitor Global Options" on page 499), or it can be a relative date. Relative dates are specified as 0, -1, -2,... to signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. If both From and To dates are specified, they must be in the same format.

Time is optional. If From time is not specified, it defaults to the start of the day. If To time is not specified, it defaults to the end of the day.

The specified date/time range is included as parameter input in the generated JCL under `//IPIOPTS DD *`

```
IMSPAMON START(yyyy/mm/dd,hh:mm:ss:th),
         STOP(yyyy/mm/dd,hh:mm:ss:th)
```

Unresolved Data Sets Options

Default: Not selected.

This option allows you to control what IMS PA does when it strikes a problem with JCL generation because the system or file definitions for your System Selection are incomplete. Select one of the following actions:

1. **Issue error message**. IMS PA aborts JCL generation and reports the errors in a window titled Report Set JCL Generation Failure. This allows you to link to System Definitions and correct your file specifications.
2. **Edit unresolved JCL**. IMS PA proceeds with JCL generation creating DD statements with `DSN=<unresolved>` where the files are not known. Regardless of your JCL or SUB request, the JCL is edited to allow you to specify the DSNs before submission.

Execution Mode

Default: According to the command entered.

Specify whether to execute the Report Set or generated commands, and whether you want to edit the JCL before submit. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling or ad hoc report requests.

The options are:

1. Submit Report Set. This is equivalent to the SUBMIT or SUB command.

   The Report Set JCL contains the statements:

   ```
   //IPIRSET  DD DSN=ReportSets.DSN(ReportSetName),DISP=SHR
   //IPIOBJL  DD DSN=ObjectLists.DSN,DISP=SHR
   //IPIDIST  DD DSN=Distributions.DSN,DISP=SHR
   ```

2. Edit JCL before submit. This is equivalent to the JCL command. It generates the same JCL as SUBMIT, but allows you to edit it.
3. Edit JCL with command input. This is equivalent to the JCLCMD or JCM command.

   This generates JCL in which the Report Set, and any Object Lists and Distributions it uses, are converted to a stream of commands and displayed to allow you to edit them. The Monitor JCL contains the statements:

```
//IPICMD  DD *
         IMSPAMON     ...,
                      INCL|EXCL(...),...
         IMSPAMON     EXECUTE
Distname DISTRIBUTION
```

   Note that when you enter RUN at the report-level as a line action or override, option 3 is the only option available to you.

Bypass run-time options prompt
Default: Not selected.

This controls the display of the prompt for runtime options, the Run Report Set panel.

Enter / to bypass the runtime options prompt. This is useful when you have specified your System Selection and you want to run your Report Sets from hereon using the SUB, JCL, or JCM commands without having the prompt intervene each time. Note that the runtime prompt cannot be bypassed if you use the RUN command to run your Report Set or you have specified a Report Interval.

Related concepts:

"Report command format" on page 41
IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

Related reference:

Chapter 23, "Monitor batch interface," on page 535
The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for Monitor report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

"Report Set JCL" on page 741
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Monitor Report Set Options

The **Options** category allows you to specify options that are common to more than one monitor report in the Report Set.

- The **Monitor Global** options apply to all reports in the Report Set. It includes Distribution Options. Global Option cannot be explicitly activated or deactivated. If any report in the Report Set is activated, then the Global Option is automatically activated.
- The **Transactions by Time Period** options apply to the two Transactions by Time Period subreports that can be selected within the Application Detail and Region Analysis reports. If either or both of these subreports are selected then this menu option is highlighted, as a reminder that its options are in use.

- **Application Grouping** options specify application groups to be reported in the Program Summary, Region Analysis and Application Detail reports. If **Application Grouping** is activated using line action **A** then the three reports will use the groupings it defines. If it is not activated (or is deactivated using **D**) then any groupings it defines are ignored. The Program Summary and Region Analysis reports will then show no grouping, and the Application Detail report will not be produced.
- **DDname Grouping** options specify DDname groups to be reported in the Database IWAIT Summary and Database IWAIT Analysis reports. If it is not activated using line action **A**, then any groupings it defines are ignored. The Database IWAIT reports will then show no grouping.
- **ESAF Integration** option specifies that External Subsystem calls are integrated into all Region and Program/Trancode reports and contribute to the total call and IWAIT counts for regions and program/trancodes.
- **Alternate Sequencing** options specify an alternate sort sequence (descending) for the summarized monitor reports. The default is to order by Name, such as Region ID, Program name, Transaction Code and Database name. Alternate Sequencing changes this to order by Occupancy, Calls (DL/I or other types), or Delay. A limit can also be specified to restrict the report to only the worst performers.

Monitor Global Options

The IMS PA Monitor Global Options define output data sets and general control information that apply to all active reports within a Report Set.

To view and edit Monitor Global Options for a Report Set:

1. Select the Monitor Report Set.
2. Expand the **Options** category using line action S.
3. Select the **Monitor Global** category using line action S.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                      SAMPMON - Monitor Global Options
Command ===> ____________________________________________________________

Specify Monitor Global options.

Monitor Source                            ──── Report Interval ────
1  1. Online  2. Batch                         YYYY/MM/DD  HH:MM:SS:TH
                                          From __________  ___________
Processing Options:                       To   __________  ___________
_  Report Breaks by Region
_  Override 'IWAIT for no-message'        Report Output DDnames:
_  Report BMP Regions only                 Summary . . . SUMMRPT
_  Exclude BMP Regions                     Detail  . . . DETLRPT

Distribution Options:                     Processing Limits:
_  Include Distributions in Reports        Min VSAM IWAIT   0        msec
_  Specify Distributions

Report Options:
 Report Break Points . . . STOP  (HOUR, STOP, EOF or nnnn Minutes)
 Print Lines per Page  . . 60    (1-255)

Trace Data Set ____________________________________________

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Program Name (PSB)     ___    ________   _
```

Figure 238. Monitor Global Options Panel

The options are as follows:

Report Interval

Default: Not specified. All records are included.

This allows you to specify a time period for selecting a subset of the input file data for passing to the report processors. Records with time stamps on or after the From Date/Time and before the To Date/Time are selected for processing. Reducing the time period can significantly reduce total processing time and virtual storage requirements for generating the reports in the Report Set.

A Report Interval can be specified for some individual reports, and is applied within the context of the Global Report Interval.

You can specify one of the following:

- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2018/07/06 8:00 to 2018/07/08 17:00). Input records between the From Date/Time and To Date/Time are selected for report processing. Any records at the start or end of the input file that are outside the specified range are bypassed. The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Input records whose time stamp is within the specified time slot, irrespective of the date, are selected for report processing. Any records throughout the input file whose time of day is not within the specified time slot are bypassed. The From and To Times must be different. Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

Rules governing the date:
- A date is expected in a format consistent with your **Preferred Date Format** specified in the online interface settings. See Figure 12 on page 68.
- If the year of the date is specified as **** (four asterisks), the current year is substituted at the time the Report Set is executed.
- If the century of the year is omitted then, if the year is less than 73, century 2000 is assumed, otherwise century 1900 is assumed.
- If the From Date is omitted, it will default at run time to the start of the input file.
- If the To Date is omitted, it will default at run time to the end of the input file.

Rules governing the time:
- Time is expressed as *hh*:*mm*:*ss*:*th* for hours, minutes, seconds, tenths and hundredths of a second. Colon delimiters separate the parts of the time.
- If the From Time is omitted, it will default at run time to 00:00:00:00.
- If the To Time is omitted, it will default at run time to 23:59:59:99.

Detail Report Output DDname

Default: `DETLRPT`

Specify the DDname for the output of the following detail reports:
- Application Detail
- Region Analysis
- Database IWAIT Analysis
- Program Activity Detail

Summary Report Output DDname

Default: `SUMMRPT`

Specify the DDname to be used for the output of the following summary reports:
- Schedule/Transaction Summary
- Program (PSB) Summary
- Region Summary
- Database IWAIT Summary

Monitor Source (Online or Batch)

Default: **1. Online** (IMS Monitor data is used).

Select **1** to specify that Online (IMS Monitor) data is to be used. Select **2** to specify that Batch (DB Monitor) data is to be used.

Report Breaks by Region

Default: Not selected; the reports are not produced by region.

Select with a / to specify that the following reports, if requested, are to be produced by region:
- Database IWAIT Analysis. See "Database IWAIT Analysis report" on page 513.
- PSB-TranCode Analysis. See "Program Activity Detail reports" on page 520.

Override 'IWAIT for no-message'

Default: Not selected; each wait-for-input (SUBQ6) IWAIT event is treated as a pseudo-schedule, and it increments the schedule count by one. The schedule count that is reported is the sum of the actual schedules and the wait-for-inputs.

Select with a / to disregard each wait-for-input event when calculating the schedule count. The schedule count that is reported is the actual schedules only.

This generates the ALTSCHED global report operand.

Report BMP Regions only
Default: Not selected; all regions are reported.

Select with a / to report only BMP regions. This generates the BMPONLY global report operand.

Exclude BMP Regions
Default: Not selected; BMP regions are included.

Select with a / to exclude BMP regions from reports. This generates the NOBMP global report operand.

Include Distributions in Reports
Default: Not selected; distributions are not produced.

Select with a / to produce distribution graphs in the following reports, if activated:
- Region Summary
- Region Detail (in Region Analysis)
- PSB-TranCode Analysis (in Program Activity Detail)
- Program Trace

The particular distribution graphs to be produced are specified on the Distributions Options panel invoked by selecting **Specify Distributions**. If a Distribution is not specified, the corresponding distribution graph will not be produced.

Specify Distributions
Select with an S or E to display the Distributions Options panel. See "Distributions Options" on page 503 for further details.

Minimum VSAM IWAIT
Default: 0

Specify, in milliseconds, the minimum IWAIT elapsed time to be reported as VSAM IWAIT. IWAITs greater than this value are reported as VSAM IWAITs. IWAITs less than this value are reported as total system IWAIT. The maximum value is 999999999.

Note: Specify 0 to report all IWAITS as VSAM IWAITs. This is recommended because the IMS Monitor only records VSAM I/O IWAITs.

Report Break Points
Default: STOP

Specify when reports are to be written, as follows:

HOUR Write reports every hour.
STOP Write reports at the end of each trace.
EOF Write reports at the end of the monitor input file, combining multiple trace intervals if present.
nnnn Write reports every *nnnn* minutes. The maximum value is 9999.

All times refer to trace times.

Print Lines per Page
Default: 60

Specify the number of lines per page for all monitor reports, except the Schedule/Transaction Summary and Enqueue/Dequeue Trace reports which ignore this option. Valid values are from 1 to 255.

Trace Data Set

Default: None.

Specify the name of a data set to be used to write trace statistics records when the Report Set is executed for any active reports. The data set has DDname IPISTOUT and can then be passed to the IMS Monitor or DB Monitor Report Print utilities DFSUTR20 and DFSUTR30 to format the statistics. If no data set name is specified then the trace statistics records are not written.

The Trace Data Set must be a sequential data set with a VB record format. The recommended LRECL is 2044 bytes with an appropriate BLKSIZE of 2048 or higher. If the specified data set does not exist, it is given default allocation attributes at the time the Report Set JCL is built. The default allocation details are specified using **Reporting Allocation Settings** from the action bar **Options** menu.

The following records are written to the Trace Data Set:

Record code	Description	Monitor
90	Monitor start	DB or IMS
91	Monitor end	DB or IMS
80	Intent Failure	IMS only
82	Pool Space Failure	IMS only
86	FF Deadlock Detected	IMS only

Note: IMS PA provides all the reporting capability of DFSUTR20 and DFSUTR30.

Selection Criteria

Default: None specified; include all.

Records can be included or excluded based on their Program (PSB) name. This selection applies to all monitor reports, with the exception of the Total System IWAIT reports and the Region Histogram.

Include specifies that reporting is restricted to the listed PSBs and any activity associated with these PSBs. **Exclude** specifies that the listed PSBs and any activity associated with them are not to be included in the reports.

This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Related reference:

"Monitor Global Options" on page 543
The Monitor Global Options define output and general control information for the monitor reports.

Distributions Options

The Distributions Options allow you to request up to four distribution graphs by specifying the names of Distributions which define the layout of the graphs.

This panel is invoked from the Monitor Global Options panel by selecting **Specify Distributions**.

You can use the sample Distributions provided with IMS PA, or other Distributions defined using option 7 **Distributions** from the IMS PA primary option menu (See Chapter 11, "Distributions," on page 157).

The Distributions are applicable to the monitor reports as follows:

- The Region Summary, Region Analysis, Region Detail, Program Activity Detail (PSB-TranCode Analysis), and Program Trace reports use the Elapsed Time per Schedule, Elapsed Time per Call, Elapsed Time per IWAIT, and IWAITs per Call Distributions.
- The Program Trace report uses the Elapsed Time per Call, Elapsed Time per IWAIT, and IWAITs per Call Distributions. The Exception Listing also uses the upper limit of these Distributions as threshold values if they are not specified explicitly on the Performance Exceptions panel.

Other monitor reports produce distribution graphs, but the Distributions are specified on the particular report panels; for example, the Fast Path Analysis reports, Total System IWAIT reports, and the Database IWAIT Analysis report. See "Distribution and Report cross-reference" on page 161 for a summary of which Distributions are applicable to which reports.

```
  File  Options  Help
_____________________________________________________________________________

                    SAMPMON - Distributions Options
Command ===> _____________________________________________________________

Specify report options.

                                                 Validation Warning
Elapsed Time per Schedule  . . ________  +
Elapsed Time per Call  . . . . ________  +
Elapsed Time per IWAIT . . . . ________  +
IWAITS per Call  . . . . . . . ________  +
```

Figure 239. Monitor Report Distributions Options

The options are:

Elapsed Time per Schedule Distribution
Default: Not specified; graph is not produced.

Specify the name of a Distribution which defines the characteristics of the Elapsed Time per Schedule distribution graph for the Region Summary, Region Analysis, Region Detail, and Program Activity Detail (PSB-TranCode Analysis) reports.

The sample Distribution ELAPSCH is provided. It specifies:
Ranges (Limits) = 1,5,10,30,50,100,300,500,1000
Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

Elapsed Time per Call Distribution
Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the characteristics of the Elapsed Time per Call distribution graph for the Region Summary, Region

Analysis, Region Detail, Program Activity Detail (PSB-TranCode Analysis), and Program Trace reports. Also, the Exception Listing report uses the upper limit as the threshold for *Call Elapsed* exceptions if a value is not specified explicitly on the Performance Exceptions panel.

The sample Distribution ELAPCAL is provided. It specifies:
Ranges (Limits) = 1,5,10,30,50,100,300,500,1000
Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

Elapsed Time per IWAIT Distribution
Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the characteristics of the Elapsed Time per IWAIT distribution graph for the Region Summary, Region Analysis, Region Detail, Program Activity Detail (PSB-TranCode Analysis), and Program Trace reports. Also, the Exception Listing report uses the upper limit as the threshold for *IWAIT Elapsed* exceptions if a value is not specified explicitly on the Performance Exceptions panel.

The sample Distribution ELAPIWT is provided. It specifies:
Ranges (Limits) = 1,5,10,30,50,100,300,500,1000
Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

IWAITs per Call Distribution
Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the characteristics of the IWAITS per Call distribution graph for the Region Summary, Region Analysis, Region Detail, Program Activity Detail (PSB-TranCode Analysis), and Program Trace reports. Also, the Exception Listing report uses the upper limit as the threshold for *IWAITs per Call* exceptions if a value is not specified explicitly on the Performance Exceptions panel.

The sample Distribution IWTSCAL is provided. It specifies:
Ranges (Limits) = 1,2,3,4,5,6,7,8,10
Title = Count
Multiplier = 1
Edit Mask = ZZZ,ZZZ,ZZ9

For all Distributions, you can enter the name directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (**F4**).

Related reference:

"DISTRIBUTION: Distributions Options" on page 544
The Distributions Options describe the layout of distribution graphs which show the dispersion of the values of certain performance measures.

Transactions by Time Period Options

This panel maintains the time periods and other options used by the Transactions by Time Period report, which is optionally included in the Region Analysis and Application Detail reports.

```
 File  Options  Help
──────────────────────────────────────────────────────────────────────────────

                SAMPMON - Transactions by Time Period Options
Command ===> _________________________________________________________________

Specify Transactions by Time Period options.

Report Transactions as:                ───── Report Interval ─────
1  1. Count                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Percent of Total Transactions     From __________  ___________
                                        To   __________  ___________

Time Ranges (HH:MM:SS in ascending sequence):
  1. 00:00       2. 07:00       3. 08:00       4. 09:00
  5. 10:00       6. 11:00       7. 12:00       8. 13:00
  9. 14:00      10. 15:00      11. 16:00      12. 17:00
 13. 18:00      14. 19:00
```

Figure 240. Transactions by Time Period Options

The options are:

Report Transactions as Count or Percent

Default: **1** (report transaction counts)

Select with **1** to report transaction counts or with **2** to report as a percentage of total transactions.

From and To Date/Time

Defaults: Not specified

Specify the reporting interval. Within the context of **Start** and **Stop** Date/Time on the Monitor Global Options panel, records with time stamps on or after the **From** Date/Time and before the **To** Date/Time are included in the report.

You can specify one of the following:
- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2000/07/06 7:00 to 2000/07/07 16:30). The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

Rules governing the date:
- A date is expected in a format consistent with your **Preferred Date Format** specified in the online interface settings. See Figure 12 on page 68.
- If the year of the date is specified as **** (four asterisks), the current year is substituted at the time the Report Set is executed.
- If the century of the year is omitted then, if the year is less than 73, century 2000 is assumed, otherwise century 1900 is assumed.
- If the From Date is omitted, it will default at run time to the start of the input file after filtering by the Start Date.
- If the To Date is omitted, it will default at run time to the end of the input file after filtering by the Stop Date.

Rules governing the time:
- Time is expressed as *hh*:*mm*:*ss*:*th* for hours, minutes, seconds, tenths and hundredths of a second. Colon delimiters separate the parts of the time.
- If the From Time is omitted, it will default at run time to 00:00:00:00.

- If the To Time is omitted, it will default at run time to 23:59:59:99.

Time Ranges

Defaults:

```
 1. 00:00    2. 07:00    3. 08:00    4. 09:00
 5. 10:00    6. 11:00    7. 12:00    8. 13:00
 9. 14:00   10. 15:00   11. 16:00   12. 17:00
13. 18:00   14. 19:00
```

Specify up to 14 ascending times to be used as ranges for accumulating and reporting data. Only times are allowed, not dates. The format of the time is *hh*:*mm*:*ss* for hours, minutes and seconds. Colon delimiters must be used to separate the parts of the time.

Related reference:

"TIMEREPORT: Transactions by Time Period Options" on page 545
The TIMEREPORT operand of the IMSPAMON batch command specifies control information for the Transactions by Time Period report, which is optionally produced by the Region Analysis and Application Detail reports.

Application Grouping Options

The Application Grouping Options define groups of records based on Program (PSB) name.

Application Grouping Options are applicable to the following reports:
- Program (PSB) Summary
- Application Detail
- Region Analysis

The reports contain one line item for each specified Program (PSB) group. Records not included in any specified group are summarized into the group category SYSTEM.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                    SAMPMON - Application Grouping Options
Command ===> ____________________________________________________________

Specify Application Grouping options.

Application Group(s):
 Object List +  Type     Validation Warning

  ________

 Note: An Object List type of APGRP is expected, or PROG for a single group.
```

Figure 241. Application Grouping Options

The grouping options are:

Application Groups

Default: No application grouping defined.

Object List specifies either the name of one Program (PSB) Object List which is to be reported as one group, or the name of an Application Group Object List that contains the names of many Program (PSB) or Application Group Object Lists to be reported as many groups. To select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**).

See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

Note: Ranges are not supported.

Type is automatically determined by IMS PA from the specified Object List name.

A **Validation Warning** is displayed if the **Type** is other than PROG or APGRP.

Related reference:

"APPLICATION: Application Grouping Options" on page 546
The Application Grouping Options specify one or more groups of Program (PSB) names to appear as line items in the Program Summary and Region Analysis reports, and in the heading of the Application Detail report.

"Program Summary report" on page 511
There are no panel options specific to this report. The report can only be activated or deactivated.

"Application Detail report" on page 512
The options of the Application Detail report are described here.

"Region Analysis report" on page 512
The options for the Region Analysis report are described here.

DDname Grouping Options

DDname Grouping Options define groups of records based on DDnames.

DDname Grouping Options are applicable to the following reports:
- Database IWAIT Summary
- Database IWAIT Analysis

The Database IWAIT Summary report contains one line item for each specified DDname group. The Database IWAIT Analysis report contains separate reports with the heading `IWAIT Analysis DDgrp = xxxxxxxx` for each specified DDname group *xxxxxxxx*. Records not included in any specified group are summarized into the group category SYSTEM.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                       SAMPMON - DDname Grouping Options
Command ===> ____________________________________________________________

Specify DDname Grouping options.

DDname Group(s):
 Object List +  Type     Validation Warning

  ________

 Note: An Object List type of DDGRP is expected, or DD for a single group.
```

Figure 242. DDname Grouping Options

The grouping options are:

DDname Groups
Default: No DDname grouping defined.

Object List specifies either the name of one DDname Object List which is to be reported as one group, or the name of a DDname Group Object List that contains the names of many DDname or DDname Group Object Lists

to be reported as many groups. To select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**).

See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

Note: Ranges are not supported.

Type is automatically determined by IMS PA from the specified Object List name.

A **Validation Warning** is displayed if the **Type** is other than DD or DDGRP.

Related reference:

"DDGROUP: DDname Grouping Options" on page 546
The DDname Grouping Options specify one or more groups of ddnames to appear as line items in the Database IWAIT Summary report and in the heading of the Database IWAIT Analysis (DDgroup) report.

"Database IWAIT Summary report" on page 511
There are no panel options specific to this report. The report can only be activated or deactivated.

"Database IWAIT Analysis report" on page 513
The options for Database IWAIT Analysis reports are described here.

ESAF Integration Option

When the ESAF Integration Option is activated, ESAF call statistics are reported for each subsystem and contribute to the total call and IWAIT counts for regions and program/trancodes.

External Subsystem calls can be integrated into the following reports:
- "Region Summary report" on page 511
- "Program Summary report" on page 511
- "Region Analysis report" on page 512
- "Application Detail report" on page 512
- "Performance Exception reports" on page 514
- "Program Activity Detail reports" on page 520
- "Program Trace report" on page 522

The ESAF Integration Option can only be activated or deactivated. There is no panel associated with this option.

Related reference:

"ESAFOpts: ESAF Integration Option" on page 546
The ESAF Integration Option controls whether External Subsystem calls are integrated into all Region and Program/Trancode reports.

Alternate Sequencing Options

Alternate sequencing changes the default "name" order of a report (where the "name" field depends on the report; for example, Region ID, Program name, Transaction Code, or Database name) to descending order of one of the following: Occupancy, Calls, or Delay. You can also limit reporting to the worst performers.

An alternate sorting sequence can be specified for the following reports:
- Region Summary
- Program (PSB) Summary
- Application Detail
- Database IWAIT Analysis

- DDgroup
- Enqueue/Dequeue Trace
- Program Activity Detail
- Communication Summary, IWAIT and Line Functions
- MSC Summary, Traffic and Queueing
- DEDB Resource Contention
- Fast Path Buffer Statistics
- VSO Summary

```
  File  Options  Help
_____________________________________________________________________________

                    SAMPMON - Alternate Sequencing Options
Command ===> _____________________________________________________________

Specify the required sequence of report data.

Required Sequence:
1  1. Name
   2. Occupancy
   3. Calls
   4. Delay (IWAIT)

 Limit reporting to  . . . 100%

 Limit applies only to Occupancy, Calls and Delay.
```

Figure 243. Alternate Sequencing Options

The Alternate Sequencing options are:

Sorting Sequence
Default: 1 (sort by Name)

Specify one of the following alternate sort sequences:

Name The default order of the reports. For example, by Region ID, Program name, Transaction Code, or Database name.

Occupancy
The elapsed time that the resource is scheduled or in use. For example, the busiest regions or programs.

Calls The time spent by the resource performing DL/I or other types of calls. For example, transactions with the most DL/I call activity.

Delay The time spent by the resource waiting for IWAIT events to complete. For example, the databases which had to wait the longest for I/O to complete.

Limit Default: 100% (no limit)

Specify a limit on the number of resources reported. You can specify either a fixed number (for example, the 10 worst performing databases) or a percentage (for example, the top 10% busiest regions).

Related reference:

"ALTSEQ: Alternate Sequencing Options" on page 547
Summarized monitor reports can be ordered in an alternate sequence. By default, the reports are ordered by name, such as Region ID, Program, Transaction Code and Database.

Region Activity Summary reports

The options for Region Activity Summary reports are described here.

The reports in the Region Activity Summary Reports category are:
- Schedule/Transaction Summary
- Region Summary
- Program (PSB) Summary
- Database IWAIT Summary

Schedule/Transaction Summary report

There are no panel options specific to this report.

Restriction: This report is not produced for DB Monitor data.

Related reference:

"SCHEDTRAN: Schedule/Transaction Summary report" on page 548
The SCHEDTRAN operand of the IMSPAMON batch command requests the Schedule/Transaction Summary report.

Region Summary report

There are no panel options specific to this report. The report can only be activated or deactivated.

The "ESAF Integration Option" on page 509 and "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"REGSUM: Region Summary report" on page 548
The REGSUM operand of the IMSPAMON batch command requests the Region Summary report.

Program Summary report

There are no panel options specific to this report. The report can only be activated or deactivated.

Restriction: This report is not produced for DB Monitor data.

The "ESAF Integration Option" on page 509 and "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"Application Grouping Options" on page 507
The Application Grouping Options define groups of records based on Program (PSB) name.

"PROGSUM: Program Summary report" on page 549
The PROGSUM operand of the IMSPAMON batch command requests the Program Summary report.

Database IWAIT Summary report

There are no panel options specific to this report. The report can only be activated or deactivated.

The "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"DDname Grouping Options" on page 508
DDname Grouping Options define groups of records based on DDnames.
"IWAITSUM: Database IWAIT Summary report" on page 549
The IWAITSUM operand of the IMSPAMON batch command requests the Database IWAIT Summary report.

Region Activity Analysis reports

The options for Region Activity Analysis reports are described here.

Region Analysis report

The options for the Region Analysis report are described here.

Restriction: Only the Database IWAIT Summary report is produced for DB Monitor data; however, the Region Detail report for region 1 can be produced.

The options are as follows:

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          SAMPMON - Region Analysis
Command ===> ____________________________________________________________

Specify report options.

Reports Required:
/  Region Detail
/  Program Summary
/  Database IWAIT Summary
_  Transactions by Time Period
_
```

Figure 244. Region Analysis Report Options

Reports Required
Default: First three reports, **Region Detail**, **Program Summary**, **Database IWAIT Summary**

Select with a / to request any combination of reports. If none are selected, no reports are produced.

If **Transactions by Time Period** is selected, specify the time periods and other options on the "Transactions by Time Period Options" on page 505 panel.

The "ESAF Integration Option" on page 509 and "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"Application Grouping Options" on page 507
The Application Grouping Options define groups of records based on Program (PSB) name.

"REGANAL: Region Analysis report" on page 549
The REGANAL operand of the IMSPAMON batch command requests the Region Analysis report.

Application Detail report

The options of the Application Detail report are described here.

Restriction: This report is not produced for DB Monitor data.

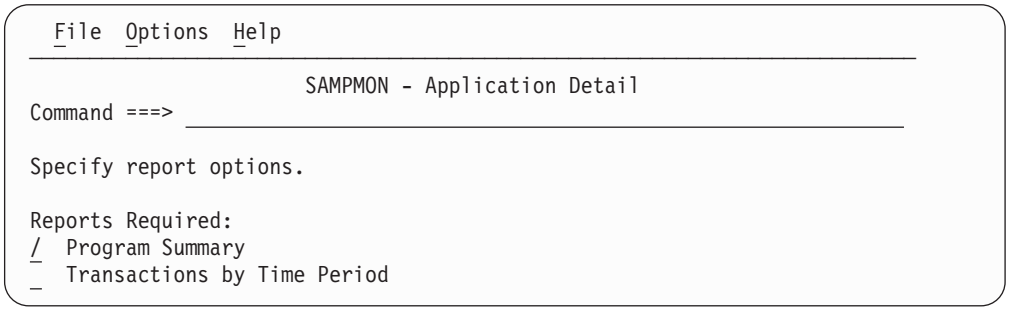


Figure 245. Application Detail Report Options

The options are as follows:

Reports Required

Default: **Program Summary**

Select with a / to request either or both reports. If neither is selected, no report is produced.

If **Transactions by Time Period** is selected, specify the time periods and other options on the "Transactions by Time Period Options" on page 505 panel.

Note: To produce the report, the **Application Grouping** option must be activated and an Application Group or Program (PSB) Object List specified.

The "ESAF Integration Option" on page 509 is applicable to this report.

Related reference:

"Application Grouping Options" on page 507
The Application Grouping Options define groups of records based on Program (PSB) name.

"APPLGRP: Application Detail report" on page 550
The APPLGRP operand of the IMSPAMON batch command requests the Application Detail report.

Database IWAIT Analysis report

The options for Database IWAIT Analysis reports are described here.

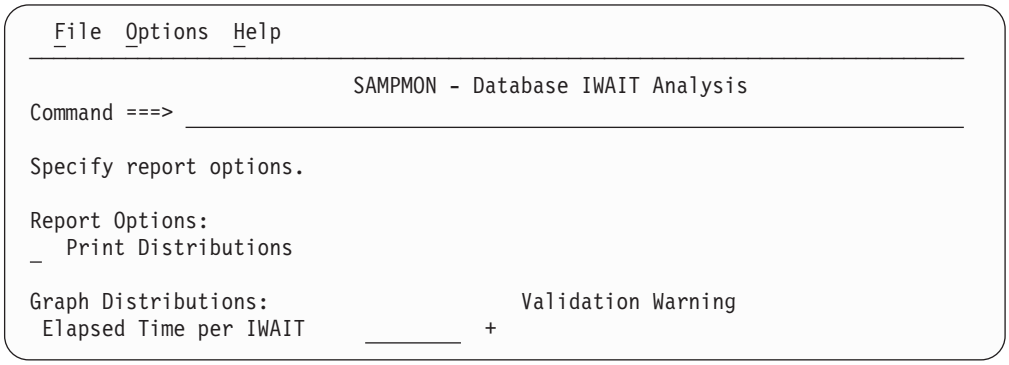


Figure 246. Database IWAIT Analysis Report Options

The options are as follows:

Print Distributions
Default: Not selected; distribution graphs are not printed.

Select with a **/** to print distribution graphs for this report. If selected, the Distribution specified for **Elapsed Time per IWAIT** is used, but if this is blank, the sample Distribution DDIWELAP is used by default at run time.

If **DDname Grouping** is activated, distribution graphs are always produced.

Elapsed Time per IWAIT Distribution
Default: Not specified; Sample Distribution DDIWELAP is used at run time if **Print Distributions** is selected.

Specify the name of a Distribution that defines the characteristics of the Elapsed Time Per IWAIT distribution graph to be produced by the report. To select from a list of available Distributions, position the cursor in the field and press **PROMPT** (F4).

You can specify the sample Distribution DDIWELAP or let this be taken as the default at run time. Otherwise, specify an alternate Distribution and define its attributes using 7 **Distributions** from the IMS PA primary option menu.

The sample Distribution DDIWELAP specifies:
Ranges (Limits) = 5,10,20,30,40,50,60,70,100
Title =Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZZ.ZZ9

The "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"DDname Grouping Options" on page 508
DDname Grouping Options define groups of records based on DDnames.

"IWAITANAL: Database IWAIT Analysis report" on page 551
The IWAITANAL operand of the IMSPAMON batch command requests the Database IWAIT Analysis report.

Performance Exception reports

The options for Performance Exception reports are described here.

Restriction: The three Summary reports are not produced for DB Monitor data.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                         SAMPMON - Performance Exceptions
Command ===> _________________________________________________________________

Specify report options.

Reports Required:                       Report Output DDname  EXCPTRPT
/  Exception Listing
/  Intent Failure summary
/  Pool Space Failure Summary
/  Deadlock Event Summary

Exception Listing Report Options:
 _   Ignore Schedules
 Maximum Allowable:
  Call Elapsed Time    _____  msecs
  IWAIT Elapsed Time   _____  msecs
  IWAITs per Call      _____
 Output Limit          9____  pages
```

Figure 247. Performance Exceptions Report Options

The options are as follows:

Reports Required
Default: All selected.

Select with a / to request any combination of the following reports:

Exception Listing
A chronological listing of several types of exceptional occurrences including violations of performance thresholds for call elapsed time, IWAIT elapsed time, and number of IWAITs per call; and unusual occurrences such as BMP schedule failures, pseudo-schedules, transaction backouts inferred, and incomplete schedules.

Intent Failure Summary
For each PSB/DMB combination, the number of schedule failures due to intent conflict.

Pool Space Failure Summary
For each pool ID, the number of attempts that failed to reserve pool space due to unavailable storage.

Deadlock Event Summary
The number of deadlocks that occurred in the segments in DMB.

Report Output DDname
Default: `EXCPTRPT`

Specify the DDname to be used for the report output.

The following options apply only to the Exception Listing:

Ignore Schedules
Suppress printing of Specifically Created Schedule and Forced Schedule End lines in the Exception Listing report. Refer to the section “Performance Exception reports” in the *IMS Performance Analyzer for z/OS: Report Reference* for further details.

Maximum Allowable

Specify threshold values (in milliseconds) for the following measures. If an actual measure exceeds the threshold it is reported as an exception.

Call Elapsed Time

Default: None.

Specify the threshold value (in milliseconds) in the range 1–99999 for Call Elapsed exceptions. If the Elapsed Time per Call exceeds this threshold, it is reported as an exception.

If omitted, the upper limit of the Elapsed Time per Call Distribution is used as the threshold value if specified on the Distributions Options panel. If neither is specified, no Call Elapsed exceptions can be reported.

IWAIT Elapsed Time

Default: None.

Specify the threshold value (in milliseconds) in the range 1–99999 for IWAIT Elapsed exceptions. If the Elapsed Time per IWAIT exceeds this threshold, it is reported as an exception.

If omitted, the upper limit of the Elapsed Time per IWAIT Distribution is used as the threshold value if specified on the Distributions Options panel. If neither is specified, no IWAIT Elapsed exceptions can be reported.

IWAITs per Call

Default: None.

Specify the threshold value in the range 1–99999 for IWAITs per Call exceptions. If the number of IWAITs per Call exceeds this threshold, it is reported as an exception.

If omitted, the upper limit of the IWAITs per Call Distribution is used as the threshold value if specified on the Distributions Options panel. If neither is specified, no IWAITs per Call exceptions can be reported.

Output Limit

Default: 9

Specify the maximum number *nnnnn* of pages to be produced for the Exception Listing. Reporting will terminate when this *n*th page is started.

The "ESAF Integration Option" on page 509 is applicable to the Exception Listing.

Related reference:

"EXCEPTION: Performance Exception reports" on page 552
The EXCEPTION operand of the IMSPAMON batch command requests the suite of Performance Exceptions reports.

Enqueue/Dequeue Trace report

The IMS PA Enqueue/Dequeue Trace report traces a maximum of nine regions.

Restriction: This report is not produced for DB Monitor data.

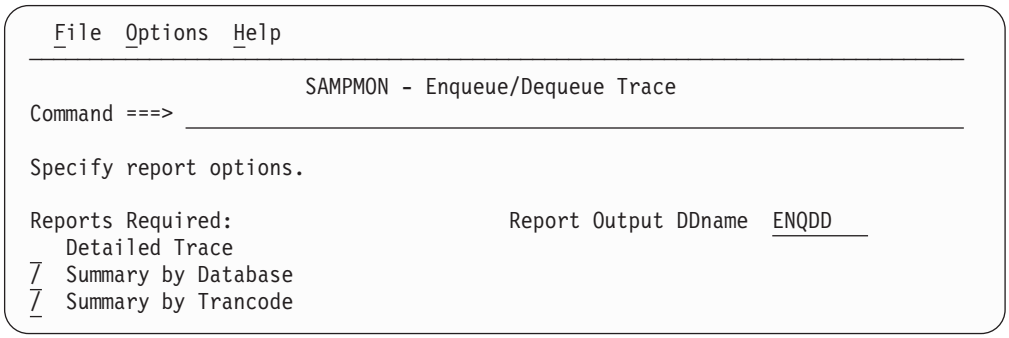


Figure 248. Enqueue/Dequeue Trace Report Options

The options are as follows:

Reports Required
Default: **Summary by Database** and **Summary by Trancode**

Select with a / to request any combination of the following reports:

Detailed Trace
A detailed trace of the database enqueue conflicts occurring during the reporting interval. A detail line is printed for each enqueue IWAIT interval recorded on the monitor data set. The PSB names active in the IMS region during the interval are displayed.

Summary by Database
A Summary of Waiting Transaction Codes by Database/Segment.

Summary by Trancode
A Summary of Database/Segments by Waiting Transaction Codes.

Report Output DDname
Default: ENQDD

Specify the DDname to be used for the report output.

The "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"ENQTRACE: Enqueue/Dequeue Trace report" on page 553
The ENQTRACE operand of the IMSPAMON batch command requests the Enqueue/Dequeue Trace report.

Region Histogram report

Restriction: This report is not produced for DB Monitor data.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                          SAMPMON - Region Histogram
Command ===> _________________________________________________________________

Specify report options.

Report Options:                         ────── Report Interval ───────
 Output Line Interval   1000   msec          YYYY/MM/DD  HH:MM:SS:TH
 CPU/Transaction Limit  ________   msec  From __________  ___________
 Duplicate Line Limit   _____            To   __________  ___________

                                        Report Output DDname  RGNHIST

Regions to Include:
    Object Type      Object +  List    Validation Warning
 Region ID by PST    ________   _
```

Figure 249. Region Histogram (Monitor) Report Options

The options are as follows:

Output Line Interval
Default: 1000

Specify the number of milliseconds between output lines. The minimum value is 10 milliseconds and the maximum is 60000. Any value can be used, but it might be converted to a more efficient value. For example, 160 is converted to 200 to obtain 5 intervals per second. Any value over one second is converted to the nearest second.

CPU/Transaction Limit
Default: No limit.

Specify the maximum number of milliseconds of CPU time per transaction. If the average CPU time per transaction for the transactions processed during a schedule exceeds this value, it is flagged by appending an * (asterisk) to the number of messages enqueued at schedule end.

Duplicate Line Limit
Default: None.

Specify that all duplicate lines in excess of the given value are to be skipped. All activity on the lines must be identical for the output to be condensed. The maximum number of lines is 32767.

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Monitor Global Report Interval. Standard rules apply to the date and time specification (see “Transactions by Time Period Options” on page 505).

Report Output DDname
Default: RGNHIST

Specify the DDname to be used for the report output.

Regions to Include
Default: First 13 active regions encountered in the input data.

Specify one PST Number, or the name of a Region ID by PST Object List (select **List** with a /), to nominate which regions to include in this report, up to a maximum of 13 regions. Masking is not supported. In the Object

List, ranges of values can be specified. If a requested region is not found in the input data, a report column will still be created for it. See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.

You can enter the name of an Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**).

Related reference:

“HISTOGRAM: Region Histogram (Monitor) report” on page 553
The HISTOGRAM operand of the IMSPAMON batch command requests the Region Histogram report.

System Analysis reports

The options for System Analysis reports are described here.

The Monitor System Analysis reports are:
- Total System IWAIT

Total System IWAIT reports

The options for Total System IWAIT reports are described here.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────
                     SAMPMON - Total System IWAIT
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                        Report Output DDname  IWTSUMMY
/  Total System IWAIT Summary
/  Total System IWAIT Detail

Graph Distributions:                      Validation Warning
 Elapsed Time per IWAIT      ________  +
```

Figure 250. Total System IWAIT Reports Options

The options are as follows:

Reports Required: Total System IWAIT Summary, Total System IWAIT Detail
Default: Both selected.

Select with a / to request either or both reports.

Report Output DDname
Default: IWTSUMMY

Specify the DDname to be used for the report output.

Elapsed Time per IWAIT Distribution
Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the characteristics of the Elapsed Time per IWAIT distribution graph in the Total System IWAIT Summary and Detail reports. To select from a list of available Distributions, position the cursor in the field and press **Prompt** (**F4**).

The sample Distribution IWTSUMMY is provided. It specifies:
Ranges (Limits) = 1,5,10,30,50,100,300,500,1000
Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

The "Alternate Sequencing Options" on page 509 is applicable to the Total System IWAIT Detail report.

Related reference:

"TSIWAIT: Total System IWAIT reports" on page 554
The TSIWAIT operand of the IMSPAMON batch command requests the Total System IWAIT reports.

Program Analysis reports

The options for Program Analysis reports are described here.

The Program Analysis reports are:
- Program Activity Detail
- Program Trace
- Batch VSAM Statistics

Program Activity Detail reports

The options for the Program Activity Detail reports are described here.

```
  File  Options  Help
_____________________________________________________________________________
                     SAMPMON - Program Activity Detail    No reports selected
Command ===> _____________________________________________________________

Specify report options.

Report Format:                          Supplementary Reports:
1  1. PSB Details                       _  DDname by PSB-TranCode
   2. PSB-TranCode Analysis
   3. PSB Details with PSB-TranCode
      data added at the lowest level

Reports Required (in Report Format):
_  Function Code
_  Segment Name
_  DDname
_  Function-Segment Name
_  Function-DDname
_
```

Figure 251. Program Activity Detail Report Options

The options are as follows:

Report Format

Default: **1. PSB Details**

Select **1** or **3** to specify that the PSB Details reports are to be produced. Option **3** will produce the additional details of Transaction Code within PSB for all included PSBs. Both these reports have the heading `PSB Details` *xxxxxxxx*where *xxxxxxxx* is determined by the selection of **Reports Required**. The possible headings are:

PSB Details PCB Totals
Shows all calls by PCB.

PSB Details by Function Code
Shows all calls by the combination of PCB and function.

PSB Details by Segment Name Feedback
Shows all calls by the combination of PCB, function segment level, segment name, and status code.

PSB Details by Function Code Segment Name
Shows all calls by the combination of PCB, segment level, segment name, and status code.

PSB Details PCB Totals (DD)
Shows the calls that result in IWAITs, presented by PCB.

PSB Details by DDname (DD)
Shows the calls that result in IWAITs, presented by the combination of PCB and DDname.

PSB Details by Function Code (DD)
Shows the calls that result in IWAITs, presented by the combination of PCB and function.

PSB Details by Function Code-DDname (DD)
Shows the calls that result in IWAITs, presented by the combination of PCB, function, and DDname.

Select **2** to specify that PSB-TranCode Analysis reports are to be produced. They provide detailed information on program activities and calls that the program issues. The reports have the heading `Analysis of` *`PSBname-TranCode`* for all Transaction Codes for the Included PSBs. The subheadings of the reports are determined by the selection of **Reports Required**.

Supplementary Report - DDname by PSB-TranCode
Default: Not selected.

Select with a / to request the DDname by PSB-TranCode report. This report presents the analysis information on calls and IWAIT activities for each combination of DDname (major to minor), PSB name, transaction code, and PCB name. The report has the heading `DDname by PSB-Tran using`.

The **Reports Required** option is not applicable to this report.

Reports Required (in Report Format)
Default: None selected.

Select with a / to request any combination of reports to be produced in the format specified by the **Report Format** option.

Select **Function Code** to request “PCB Totals” and “by Function Code” reports.

Select **Segment Name** to request “PCB Totals” and “by Segname Feedbk” reports.

Select **DDname** to request “PCB Totals”, “PCB Totals(DD)”, and “by DDname IWTd On” reports.

Select **Function-Segment Name** to request “PCB Totals” and “by Functn-Segname” reports.

Select **Function-DDname** to request “PCB Totals”, “PCB Totals(DD)”, “by Function(DD)”, and “by Functn-DDname” reports.

Note: This option is not required for the Supplementary Report **DDname by PSB-TranCode**.

The “ESAF Integration Option” on page 509 is applicable to the **PSB Details** and **PSB-Trancode Analysis** reports.

Related reference:

“PSBREPORTS: Program Activity Detail report” on page 555
The PSBREPORTS operand of the IMSPAMON batch command requests the Program Activity Detail reports.

Program Trace report

The options for Program Trace reports are described here.

```
  File  Edit  Options  Help
──────────────────────────────────────────────────────────────────────────────
                           SAMPMON - Program Trace            Row 1 to 2 of 2
Command ===> ________________________________________________ Scroll ===> PAGE

Specify report options.

Enter "/" to select action.

   YYYY/MM/DD HH:MM:SS:TH  --- Trace Combination ----
   From       From           Prog     Tran     Regn    Type   Limit    DDname
   To         To
_  2014/06/25 02:00:00:00  PMENU___ ________ ________  SUMM  100_____ TRACE1__
   2014/06/25 02:10:00:00

_  2014/06/25 02:00:00:00  ________ STOCK___ ________  LONG  150_____ TRACE2__
   2014/06/25 02:10:00:00

****************************** Bottom of data ********************************
```

Figure 252. Program Trace Report Options

Any number of separate traces can be requested, each defined by a set of the following parameters:

Report Interval
Defaults: Not specified.

Specify the reporting interval within that specified by the Monitor Global Report Interval. Standard rules apply to the date and time specification (see “Transactions by Time Period Options” on page 505).

Validation of the date and time might result in a warning message that will be displayed on the same row as the date/time to which the message relates.

Note: This option is not applicable to batch region traces. Instead, use the **Report Interval** on the Monitor Global Options panel.

Trace Combination (Prog-Tran-Regn)
The Trace Combination identifies the resource to be traced. You must specify one or more of the following three fields to identify the resource.

- For **Prog**, specify the PSB name to trace. For batch region traces, specify `%PSB0001`.
- For **Tran**, specify the Transaction Code to trace.
- For **Regn**, specify the Region PST number (1 to 999) to trace.

Each report can only trace one resource. You can request additional traces for other resources.

Type Default: `SUMM`

Enter one of the following:

SHORT One line is to be printed per call. The one page summary is also produced.

LONG One line is to be printed per call, plus one line per IWAIT. The one page summary is also produced.

SUMM A one page summary is to be printed per trace.

Limit Default: No limit.

Specify the maximum number of schedules to be processed in this trace.

DDname
Default: `PGMTRACE`

Specify the DDname for the trace. The DDname must be different for each trace.

Line Actions: The following line actions can be performed on a row of trace options:

/ Display the menu of line actions
I Insert a null row after this row
R Repeat this row
C Copy this row
M Move this row
A (Move/Copy) After this row
B (Move/Copy) Before this row
D Delete this row

The "ESAF Integration Option" on page 509 is applicable to this report.

From the **Edit** menu on the action bar, or by direct entry on the command line, the following panel-level action is available:

Reset (RES)
Remove all line actions and delete any blank rows.

Related reference:

"TRACE: Program Trace report" on page 556
The TRACE operand of the IMSPAMON batch command requests Program Trace reports.

Batch VSAM Statistics report

The options for the Batch VSAM Statistics report are described here.

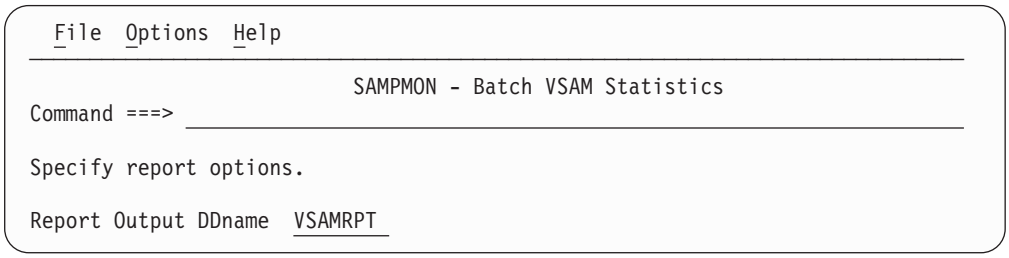


Figure 253. Batch VSAM Statistics Report Options

The options are as follows:

Report Output DDname
Default: VSAMRPT

Specify the DDname to be used for the report output.

Related reference:

"VSAMSTAT: Batch VSAM Statistics report" on page 558
The VSAMSTAT operand of the IMSPAMON batch command requests the Batch VSAM Statistics report. This report provides similar output to the DFSUTR30 VSAM Statistics report.

Resource Usage reports

The options for Resource Usage reports are described here.

The Resource Usage reports are:
- Buffer Pool & Latch Statistics
- Communication reports
- MSC report
- ESAF report
- Synchronous Callout report

Buffer Pool and Latch Statistics reports

The options for the Buffer Pool and Latch Statistics reports are described here.

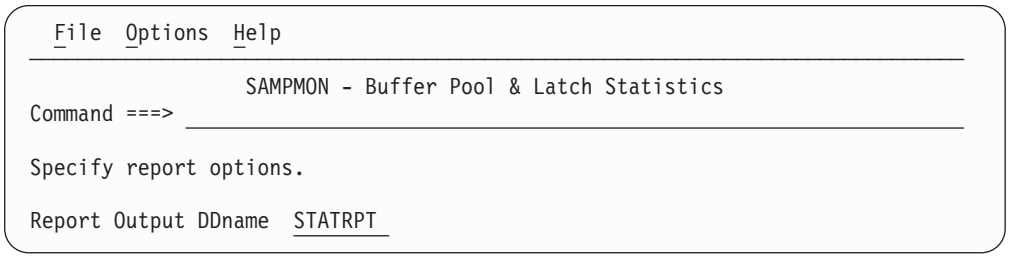


Figure 254. Buffer Pool and Latch Statistics Report Options

The options are as follows:

Report Output DDname
Default: STATRPT

Specify the DDname to be used for the report output.

Note: The Buffer Pool and Latch Statistics reports are always produced when activated, regardless of the Report Interval specification, as they provide a summary of the monitor start (90) and monitor end (91) records.

Related reference:

"STATIS: Buffer Pool and Latch Statistics reports" on page 558
The STATIS operand of the IMSPAMON batch command requests the Buffer Pool and Latch Statistics reports.

Communication reports

The options for Communication reports are described here.

Restriction: This report is not produced for DB Monitor data.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                           SAMPMON - Communication
Command ===> __________________________________________________________________

Specify report options.

Reports Required:                       Report Output DDname  COMMRPT
/  Communication Summary
/  Communication IWAIT
/  Line Functions

Graph Distributions:                      Validation Warning
 Communication Summary:
  Line Elapsed Time          ________  +
 Communication IWAIT:
  Line IWAIT Elapsed Time    ________  +
 Line Functions:
  Received Blksize/Block     ________  +
  Transmitted Blksize/Block  ________  +
  Turnaround Interval        ________  +
```

Figure 255. Communication Reports Options

The options are as follows:

Reports Required
Default: All selected.

Select with a / to request any combination of the following reports:

Communication Summary
Summary information on activities of teleprocessing lines or VTAM nodes.

Communication IWAIT
Detailed information on IWAITs occurring while dispatching communication subtasks to lines or VTAM nodes.

Line Functions
Information on functions of lines and VTAM nodes, including transmitted or received block sizes and turnaround intervals.

Report Output DDname
Default: `COMMRPT`

Specify the DDname to be used for the report output.

Communication Summary Distribution

Default: Not specified; graph is not produced.

Specify the name of a Distribution which defines the attributes of the **Line Elapsed Time** graph for the Communication Summary report. If not specified, the graph is not produced.

The sample Distribution COMMELP is provided. It specifies:
Ranges (Limits) = 1,2,4,8,16,32,64,128,256
Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

Communication IWAIT Distribution

Default: Not specified; graph is not produced.

Specify the name of the Distribution to define the attributes of the **Line IWAIT Elapsed Time** graph for the Communication IWAIT report. The Distribution must be specified for the distribution graph to be produced.

The sample Distribution COMMIWE is provided. It specifies:
Ranges (Limits) = 1,2,4,8,16,32,64,128,256
Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

Line Functions Distributions

Defaults: Not specified; graphs are not produced.

Specify the names of the Distributions to define the attributes of the graphs for the Line Functions report. A Distribution must be specified for the corresponding distribution graph to be produced.

For the **Received Block Size per Block** graph, the sample Distribution COMMLFR is provided. For the **Transmitted Block Size per Block** graph, the sample Distribution COMMLFT is provided. They specify:
Ranges (Limits) = 10,20,40,60,100,200,400,800,1000
Title = Block Size
Multiplier = 1
Edit Mask = ZZZ,ZZZ,ZZ9

For the **Turnaround Interval** graph, the sample Distribution COMMLFR is provided. It specifies:
Ranges (Limits) = 1,10,100,200,500,800,1000,1500,2000
Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

You can enter the name of the Distributions directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (**F4**).

See Chapter 11, “Distributions,” on page 157 for information on how to define Distributions and their attributes.

The “Alternate Sequencing Options” on page 509 are applicable to this report.

Related reference:

“COMMS: Communication reports” on page 558
The COMMS operand of the IMSPAMON batch command requests the Communication reports.

MSC reports

The options for MSC reports are described here.

Restriction: These reports are not produced for DB Monitor data.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                              SAMPMON - MSC
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                        Report Output DDname  MSCRPT
/  MSC Summary
/  MSC Traffic
/  MSC Queuing

Graph Distributions:                       Validation Warning
 MSC Queuing:
  Queue Length per Message    ________  +
  Queue Time per Message      ________  +
```

Figure 256. MSC Reports Options

The options are as follows:

Reports Required
Default: All selected.

Select with a / to request any combination of the following reports:

MSC Summary
Summary information on the number of cross-system messages.

MSC Traffic
Detailed information on local system IDs and cross-system traffic.

MSC Queueing
Detailed information on the cross-system message queue.

Report Output DDname
Default: MSCRPT

Specify the DDname to be used for the report output.

MSC Queuing Distributions
Defaults: Not specified; graphs are not produced.

Specify the names of the Distributions to define the attributes of the graphs for the MSC Queuing report. A Distribution must be specified for the corresponding distribution graph to be produced.

For the **Queue Length per Message** graph, the sample Distribution MSCQLEN is provided. It specifies:
Ranges (Limits) = 1,2,3,4,5,10,15,30,90
Title = Q Length
Multiplier = 1
Edit Mask = ZZZ,ZZZ,ZZ9

For the **Queue Time per Message** graph, the sample Distribution MSCQELP is provided. It specifies:
Ranges (Limits) = 1,5,10,50,100,500,1000,5000,10000
Title = Sc Mil Mic (for seconds, millisecs, microsecs)

Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

You can enter the name of the Distributions directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (**F4**).

See Chapter 11, "Distributions," on page 157 for information on how to define Distributions and their attributes.

The "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"MSC: MSC reports" on page 559
The MSC operand of the IMSPAMON batch command requests the MSC reports.

ESAF report

The options for the ESAF report are described here.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                              SAMPMON - ESAF
Command ===> ____________________________________________________________

Specify report options.

Report Output DDname  ESAFRPT
```

Figure 257. ESAF (Monitor) Report Options

The options are as follows:

Report Output DDname
Default: ESAFRPT

Specify the DDname to be used for the report output.

The "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"ESAF: ESAF (Monitor) report" on page 560
The ESAF operand of the IMSPAMON batch command requests the External Subsystem report.

Synchronous Callout report

The Synchronous Callout report provides a detailed analysis of sync callout activity in regions and by application programs. Individual subsystem activity is broken down by Region and Program, with statistics of sync callout activity per Transaction.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                          SAMPMON - Synchronous Callout
Command ===> ____________________________________________________________________

Specify report options.

Report Output DDname  SYNCCOUT
```

Figure 258. Synchronous Callout Report Options

The options are as follows:

Report Output DDname
Default: SYNCCOUT

Specify the DDname to be used for the report output.

Related reference:

"SYNCCOUT: Synchronous Callout report" on page 560
The SYNCCOUT operand of the IMSPAMON batch command requests the Synchronous Callout report.

Fast Path Analysis reports

The options for Fast Path Analysis reports are described here.

The Fast Path Analysis reports are:
- DEDB Resource Contention
- Fast Path Buffer Statistics
- BALG/Shared EMHQ Analysis
- OTHREAD Analysis
- VSO Summary

DEDB Resource Contention report

The options for the DEDB Resource Contention report are described here.

Restriction: This report is not produced for DB Monitor data.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                       SAMPMON - DEDB Resource Contention
Command ===> ____________________________________________________________________

Specify report options.

Report Output DDname  FPRSCONT

Graph Distributions:                     Validation Warning
 Lock IWAIT Elapsed Time     ________  +
```

Figure 259. DEDB Resource Contention Report Options

The options are as follows:

Report Output DDname
Default: FPRSCONT

Specify the DDname to be used for the report output.

Graph Distributions
Default: Not specified; graph is not produced.

Specify the name of a Distribution that defines the attributes of the **Lock IWAIT Elapsed Time** graph. A Distribution must be specified for the distribution graph to be produced. Note that this distribution graph is for all lock types.

The sample Distribution FPRCLIW is provided. It specifies:
Ranges (Limits) = 1,2,4,8,16,32,64,128,256
Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

You can enter the name of the Distribution directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (**F4**).

See Chapter 11, "Distributions," on page 157 for information on how to define Distributions and their attributes.

The "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"FPRSCONT: DEDB Resource Contention report" on page 561
The FPRSCONT operand of the IMSPAMON batch command requests the DEDB Resource Contention report.

Fast Path Buffer Statistics report

The options for the Fast Path Buffer Statistics report are described here.

Restriction: This report is not produced for DB Monitor data.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                    SAMPMON - Fast Path Buffer Statistics
Command ===> ____________________________________________________________

Specify report options.

Report Output DDname  FPBUFFER

Graph Distributions:                    Validation Warning
 Buffer Statistics          ________  +
```

Figure 260. FP Buffer Statistics Report Options

The options are as follows:

Report Output DDname
Default: FPBUFFER

Specify the DDname to be used for the report output.

Graph Distributions
Default: Not specified; graph is not produced.

Specify the name of a Distribution which defines the attributes of the **Buffer Statistics** distribution graph for the Fast Path Buffer Statistics report. If not specified, the graph is not produced.

You can enter the name of the Distribution directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (**F4**).

The sample Distribution FPBSCNT is provided. It specifies:
Ranges (Limits) = 100,200,300,400,500,600,700,800,900
Title = Counts
Multiplier = 1
Edit Mask = ZZZ,ZZZ,ZZ9

See Chapter 11, "Distributions," on page 157 for information on how to define Distributions and their attributes.

The "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"FPBUFFER: Fast Path Buffer Statistics report" on page 561
The FPBUFFER operand of the IMSPAMON batch command requests the Fast Path Buffer Statistics report.

BALG/Shared EMHQ Analysis report

The options for the BALG/Shared EMHQ Analysis report are described here.

Restriction: This report is not produced for DB Monitor data.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                      SAMPMON - BALG/Shared EMHQ Analysis
Command ===> _________________________________________________________________

Specify report options.

Report Output DDname  FPBALG__

Graph Distributions:                  Validation Warning
 Queue Length per Message    ________  +
 Queue Time per Message      ________  +
```

Figure 261. BALG/Shared EMHQ Analysis Report Options

The options are as follows:

Report Output DDname
Default: FPBALG

Specify the DDname to be used for the report output.

Graph Distributions
Defaults: Not specified; graphs are not produced.

Specify the names of the Distributions to define the attributes of the graphs for this report. If a Distribution is not specified, the corresponding distribution graph is not produced.

For the **Queue Length per Message** graph, the sample Distribution FPBGQLN is provided. It specifies:
Ranges (Limits) = 1,2,3,4,5,10,15,30,90
Title = Length
Multiplier = 1
Edit Mask = ZZZ,ZZZ,ZZ9

For the **Queue Time per Message** graph, the sample Distribution FPBGELP is provided. It specifies:
Ranges (Limits) = 1,5,10,50,100,500,1000,5000,10000
Title = Sc Mil Mic (for seconds, millisecs, microsecs)
Multiplier = 1000
Edit Mask = ZZZ.ZZ9.999

You can enter the name of the Distributions directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (**F4**).

See Chapter 11, "Distributions," on page 157 for information on how to define Distributions and their attributes.

Related reference:

"FPBALG: BALG/Shared EMHQ report" on page 562
The FPBALG operand of the IMSPAMON batch command requests the BALG/Shared EMHQ report.

OTHREAD Analysis report

The options for the OTHREAD Analysis report are described here.

Restriction: This report is not produced for DB Monitor data.

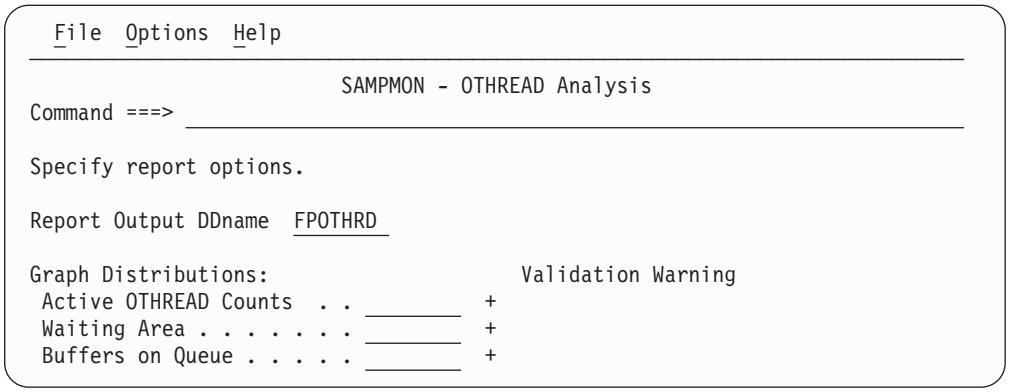


Figure 262. OTHREAD Analysis Report Options

The options are as follows:

Report Output DDname
Default: FPOTHRD

Specify the DDname to be used for the report output.

Graph Distributions
Defaults: Not specified; graphs are not produced.

Specify the names of the Distributions to define the attributes of the graphs for the OTHREAD Analysis report. A Distribution must be specified for the corresponding distribution graph to be produced.

For the **Active OTHREAD Counts** graph, the sample Distribution FPOTACT is provided. It specifies:
Ranges (Limits) = 100,200,300,400,500,600,700,800,900
Title = Counts
Multiplier = 1
Edit Mask = ZZZ,ZZZ,ZZ9

For the **Waiting Area** graph, the sample Distribution FPOTWTA is provided. For the **Buffers on Queue** graph, the sample Distribution FPOTBOQ is provided. They specify:

Ranges (Limits) = 10,20,30,40,50,60,70,80,90
Title = Counts
Multiplier = 1
Edit Mask = ZZZ,ZZZ,ZZ9

You can enter the name of the Distributions directly, or to select from a list of available Distributions, position the cursor in the field and press **Prompt** (**F4**).

See Chapter 11, "Distributions," on page 157 for information on how to define Distributions and their attributes.

Related reference:

"FPOTHRD: OTHREAD Analysis report" on page 563
The FPOTHRD operand of the IMSPAMON batch command requests the OTHREAD Analysis report.

VSO Summary report

The options for the VSO Summary report are described here.

Restriction: This report is not produced for DB Monitor data.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                          SAMPMON - VSO Summary
 Command ===> ____________________________________________________________

 Specify report options.

 Report Output DDname  FPVSOSUM
```

Figure 263. VSO Summary Report Options

The options are as follows:

Report Output DDname
Default: FPVSOSUM

Specify the DDname to be used for the report output.

The "Alternate Sequencing Options" on page 509 are applicable to this report.

Related reference:

"FPVSOSUM: VSO Summary report" on page 563
The FPVSOSUM operand of the IMSPAMON batch command requests the VSO Summary report.

Monitor Data Analysis report

The options for Monitor Data Analysis reports are described here.

The Monitor Data Analysis reports are:

- Monitor Record Trace

Monitor Record Trace report

The options for the Monitor Record Trace report are described here.

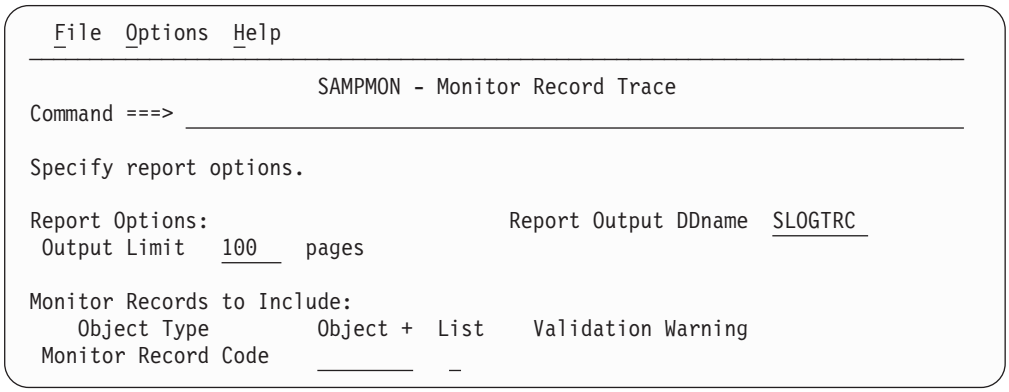


Figure 264. Monitor Record Trace Report Options

The options are as follows:

Report Output DDname
Default: SLOGTRC

Specify the DDname to be used for the report output.

Output Limit
Default: 100

Specify the maximum number of pages to be produced for this trace report.

Monitor Records to Include
Default: None specified; include all records.

Specify one monitor record code, or the name of an Object List of type RECCD (select **List** with a /), to nominate which record codes to include in this trace report. Monitor Record Codes are hexadecimal values of two characters. Masking is not supported. In the Object List, ranges of values can be specified.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**).

See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

Related reference:

"SLOGTRC: Monitor Record Trace report" on page 564
The SLOGTRC operand of the IMSPAMON batch command requests the Monitor Record Trace report.

Chapter 23. Monitor batch interface

The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for Monitor report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

Related tasks:

"Run Monitor Report Set" on page 495
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

Monitor Report Set JCL

The JCL built by IMS PA for the batch execution of a Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPIMONJC for a Monitor Report Set.

IMS PA builds the JCL to execute the program IPIMAIN using the following options specified using the dialog:

JOB **Job Statement Information** in IMS PA Settings.

IPI EXEC IPIMAIN,PARM='*parameter list***'**
IMS PA main program with parameters:

UPPER if **Reports in Upper Case** is YES in IMS PA Settings.

STEPLIB DD
IMS PA Load Library In IMS PA Settings.

TAPEDD DD
For monitor input, this DD statement is generated when two or more tape (or cartridge) input data sets are specified. TAPEDD is only used to establish unit affinity for the tape files in the JCL, and is not used by IMS PA batch processing.

MONITOR DD
Monitor Data Set Name (DSN) From System Definitions. The Monitor Files specified for the IMS Subsystem.

IPIRSET DD
For *DSN*(*member*) where:
DSN **Report Sets Data Set** in your IMS PA Profile.
member Name of the **Report Set** being run.

IPIOBJL DD
Object Lists Data Set in your IMS PA Profile.

IPIDIST DD
Distributions Data Set in your IMS PA Profile.

IPIOPTS DD *
Report Interval This overrides the Report Set Global Report Interval within the IPIRSET or IPICMD DD statements.

It is the report period specified on the Run Report Set panel at run time. To display the runtime options, you can issue the RUN command for a Report, Report Category, or Report Set.

IPISTOUT DD

Trace Data Set From Monitor Global Options.

If the data set does not exist, IMS PA uses the **Monitor Trace** allocation details in Reporting Allocation Settings.

Sample JCL: Monitor Report Set

```
//IMSPA JOB CLASS=A
//*
//IMSPA    EXEC PGM=IPIMAIN
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Monitor Input data set
//MONITOR  DD  DSN=IMS.V151.MONITOR,DISP=SHR
//*  IMSPA Messages
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  Report Set
//IPIRSET  DD  DSN=IMSPA.V440.RSET(MON01),DISP=SHR
//*  Object Lists
//IPIOBJL  DD  DSN=IMSPA.V440.OBJL,DISP=SHR
//*  Distributions
//IPIDIST  DD  DSN=IMSPA.V440.DIST,DISP=SHR
//*  Report Time Range
//IPIOPTS  DD  *
 IMSPAMON START(2018/01/13,12:15:00:00),STOP(2018/01/13,18:30:00:00)
```

Figure 265. JCL: Monitor Report Set

Related reference:

"Report Set JCL" on page 741
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Monitor JCL with command input

To generate JCL that contains commands in-stream, rather than referring to data sets, enter the dialog command JCLCMD, or its abbreviation, JCM; or, equivalently, enter RUN, and then specify the execution mode **Edit JCL with command input**.

By contrast, to generate JCL that builds commands at runtime from data sets, rather than containing commands in-stream, enter the dialog command JCL (or a RUN command that does not specify **Edit JCL with command input**). For details, see "Monitor Report Set JCL" on page 535.

The JCL generated by the JCLCMD command differs in the following ways from the JCL generated by the JCL command:

- The `IPICMD` DD statement contains the series of user modifiable commands built from the activated reports in the Report Set. A description of the Report Set appears as comments (`*` in column 1) preceding the commands. It replaces the `IPIRSET` DD statement generated by the JCL command.
- The command input stream contains INCL/EXCL command parameters built from the Object Lists used by the Report Set. They replace the `IPIOBJL` DD statement generated by the JCL command.
- The command input stream contains DISTRIBUTION command parameters built from the Distributions used by the Report Set. They replace the `IPIDIST` DD statement generated by the JCL command.
- The IMSPAMON command identifies monitor reports.

This facility allows you to build report JCL with command input once and store it into an external library for submitting at any time, independent of the original Report Set. Individual report options, such as Date/Time report intervals or object selection filters (such as Transaction Code, Program, Database) can then be modified in the JCL and submitted without making changes to the original Report Set.

Sample JCL with command input: Monitor Report Set

```
//IMSPA JOB (ACCOUNT),'NAME'
//*
//* IMS PA Report Set SAMPMON - Sample Monitor Report Set
//*
//IPI      EXEC PGM=IPIMAIN
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Input Data Sets
//MONITOR  DD  DSN=IMS.V151.MONITOR,DISP=SHR
//*  Report Time Range
//IPIOPTS  DD  *
 IMSPAMON START(-1,),STOP(0,)
/*
//*  Sysout data set
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  Report Set Command Input
//IPICMD   DD  *
* IMS PA Monitor Report
* Report Set Name - SAMPMON
* Description - Sample Monitor Report Set
* Monitor Report Global Options
*   Summary Report Output File - SUMMRPT
*   Detail Report Output File - DETLRPT
*   Trace Records Save Data Set Name - Not Specified
*   Total System IWAIT Report Output File - IWTSUMMY
*   Print Lines per Page - 60
*   When Reports are written - STOP
*   Minimum VSAM IWAIT Time (millisecs) - 5
         IMSPAMON     DDNAME(SUMMRPT),
                      DETAILDDNAME(DETLRPT),
                      PAGESIZE(60),
                      PRINTAT(STOP),
                      MINIWAIT(5)
* Schedule/Trancode Summary Report
         IMSPAMON     SCHEDTRAN
* Region Summary Report
         IMSPAMON     REGSUM
* Program Summary Report
         IMSPAMON     PROGSUM
* Database IWAIT Summary Report
         IMSPAMON     IWAITSUM
* Total System IWAIT Report
*   Summary Report
*   Detailed Report
*   Report Output File - IWTSUMMY
         IMSPAMON     TSIWAIT(
                      SUMMARY,
                      DETAIL,
                      DDNAME(IWTSUMMY))
* Buffer Pool and Latch Statistics
*   Report Output DDname - STATRPT
         IMSPAMON     STATIS(
                      DDNAME(STATRPT))
         IMSPAMON     EXECUTE
/*
```

Figure 266. JCL with command input: Monitor Report Set SAMPMON

IMSPAMON **command**

The IMSPAMON command requests a monitor report. Multiple monitor reports can be requested in the one batch job.

Format

```
IMSPAMON     operands
```

The last IMSPAMON command in the batch job must include EXECUTE as its last operand. For clarity, ensure that there is only one EXECUTE operand in the batch job. The EXECUTE operand informs IMS PA that all monitor reports have been requested, and processing of monitor input can commence.

If IMSPAMON EXECUTE is omitted, IMS PA performs syntax checking of the input commands but does not execute any reports.

For a description of the IMSPAMON operands, see "Monitor report operands" on page 542.

Example

```
IMSPAMON     START(2014/08/12,10:00),STOP(2014/08/12,11:00)
IMSPAMON     PROGSUM,REGSUM,IWAITSUM
IMSPAMON     TSIWAIT(DETAIL,SUMMARY,DDNAME(IWAITRPT))
IMSPAMON     EXECUTE
```

From this example, IMS PA will produce the following reports for the time period 10 a.m. to 11 a.m. on 12 August 2014:

- Program Summary
- Region Summary
- Database IWAIT Summary
- Total System IWAIT Detail and Summary

DISTRIBUTION command

The DISTRIBUTION command defines a Distribution to be used for monitor or log reporting. The Distribution describes the presentation and thresholds to be used by the report processors and presented in the report output.

For a detailed description of Distributions, see Chapter 11, "Distributions," on page 157.

The DISTRIBUTION command does not invoke report processing. It works in conjunction with report processing that produces distribution report output.

Format

```
name      DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

name Specifies the name of the Distribution. This name associates the Distribution with a particular report or set of reports and must be one of the following: LOGIN, $IPDIST1, $IPDIST2, SYSCKPT, ELAP/SCH, ELAP/CAL, ELAP/IWT, IWTS/CAL, IWTSUMMY, DDIWELAP, FPBSCNT, FPBGQLN, FPBGELP, FPOTACT, FPOTWTA, FPOTBOQ, FPRCLIW, COMMELP, COMMIWE, COMMLFR, COMMLFT,

COMMLFI, MSCQLEN, MSCQELP. See "Distribution and Report cross-reference" on page 161 for the list of these Distributions, their titles, and the reports they apply to.

DISTRIBUTION
Identifies the attributes of the distribution graphs.

LIMITS
Defines the nine limits which define nine ranges for the distributions. The nine limits must be in ascending sequence. When the distribution is printed, the limit values are printed at the left up the vertical axis of the graph. This operand is optional, and if omitted, the default limits are 1,5,10,30,50,100,300,500,1000.

TITLE Defines the unit of measure for the graph. Up to twelve (12) characters, including blanks, can be specified as the title. The title is printed on the left at the top of the vertical axis above the column of limit values. This operand is optional, and if omitted, the default title is Sc Mil Mic for seconds, milliseconds and microseconds respectively.

MULTIPLY
Specifies a numeric value (typically a multiple of 10) to be used to multiply by each limit. This operand is optional, and if omitted, the default is 1000.

EDITMASK
Specifies an edit mask to be used when printing the limit values. Two formats can be used:

1. Eleven (11) character quoted string.
2. Twenty four (24) character string that represents twelve (12) hexadecimal values.

If less than the maximum number of characters allowed is specified, the mask is right justified and padded on the left with blanks.

If the quoted string is used, any character can be specified, but some characters have a special meaning, as follows:

Z Zero suppression
9 Digit mask
S Trigger start

Any other character is used in the result as is. The number of digit select characters (Z, 9, S) must be odd, otherwise the low-order digit of the result will not be formatted.

If the hexadecimal string is used, up to twelve (12) hexadecimal values (24 hex characters) can be represented. The hexadecimal string is the actual edit mask as used by the edit (ED and EDMK) assembler instructions. The mask can include any valid hexadecimal value, but some have a special meaning, as follows:

20 Digit selector
21 Significance starter
22 Field separator

This operand is optional, and if omitted, the default edit mask is 'ZZZ.ZZ9.999' or 402020204B2021204B202020.

Example

```
ELAP/CAL  DISTRIBUTION LIMITS(1,5,10,30,50,100,300,500,1000),
                       MULTIPLY(1000),
                       TITLE('Sc Mil Mic'),
                       EDITMASK('ZZZ.ZZ9.999')
```

In this example, the Distribution `ELAP/CAL` is used to produce distributions of DL/I call elapsed time. The time ranges are the limit values multiplied by the multiplier and would be 0-1000, 1001-5000, 5001-10000, 10001-30000, 30001-50000, 50001-100000, 100001-300000, 300001-500000, 500001-1000000, over 1000000. When formatted by the edit mask, they are printed as `1.000, 5.000, 10.000, ..., 1.000.000` where `1.000` represents 1 millisecond and `1.000.000` represents 1 second.

COPY command

The COPY command reads one or more members of the command library. The command library must be a partitioned data set defined by the `CMDLIB DD` statement.

COPY puts precoded commands from the command library into the input stream.

Format

```
COPY        member1[,member2,...]
```

The only operands for the COPY command are one or more member names in the command library. Each member may in turn contain COPY commands. The EXECUTE operand may be within or following the last COPY command.

Member names are scanned from left to right, and members are read in the order specified. Copied members may themselves employ the COPY command. To prevent COPY loops, any request for a member currently queued for read causes an error and the member is not processed. An error message is issued for any member not found in the command library.

COPY allows users to retrieve precoded commands and include them in the input stream. Precoded commands would usually include production level command data, or static command input like Distributions, Include and Exclude lists, or commonly used reports.

Example

In this example,`MONREPS` contains a common set of monitor report commands, and `MONDISTS` contains the Distributions used by monitor reporting.

```
IMSPAMON    START(2018/01/12,10:00),STOP(2018/01/12,11:00)
COPY        MONREPS
IMSPAMON    EXECUTE
COPY        MONDISTS
```

Monitor report operands

The IMSPAMON command has two categories of operand: the reports and their specific options, and the general options (Global, Distributions, Transactions by Time Period, Application Grouping, DDname Grouping, ESAF Integration, Alternate Sequencing) that apply to multiple reports.

The IMSPAMON operands that produce reports are:

TIMEREPORT
: Transactions by Time Period

APPLICATION
: Application Group

DDGRP
: DDgroup

SCHEDTRAN
: Schedule/Transaction Summary

REGSUM
: Region Summary

PROGSUM
: Program (PSB) Summary

IWAITSUM
: Database IWAIT Summary

REGANAL
: Region Analysis

APPLGRP
: Application Detail

IWAITANAL
: Database IWAIT Analysis

EXCEPTION
: Performance Exceptions

ENQTRACE
: Enqueue/Dequeue Trace

HISTOGRAM
: Region Histogram

TSIWAIT
: Total System IWAIT

PSBREPORTS
: Program Activity Detail

TRACE
: Program Trace

VSAMSTAT
: Batch VSAM Statistics

STATIS
: Buffer Pool and Latch Statistics

COMMS
: Communication

MSC Multiple Systems Coupling

ESAF External Subsystem

SYNCCOUT
: Synchronous Callout

FPRSCONT
: DEDB Resource Contention

FPBUFFER
: Fast Path Buffer Statistics

FPBALG
: BALG/Shared EMHQ

FPOTHRD
: OTHREAD Analysis

FPVSOSUM
: VSO Summary

SLOGTRC
: Monitor Record Trace

For further details of the operands and their default values, see the description of the corresponding dialog options in Chapter 22, “Requesting Monitor reports,” on page 491.

Monitor Global Options

The Monitor Global Options define output and general control information for the monitor reports.

Format

```
 IMSPAMON    [START(date,time),]
             [STOP(date,time),]
             [DDNAME(ddname),]        default SUMMRPT
             [DETAILDDNAME(ddname),]  default DETLRPT
             [STATSDDNAME(IPISTOUT),]
             [DISTRIBUTIONS,]
             [REGIONS,]
             [MINIWAIT(nnnnnnnnn),]   default 0 msec
             [BMPONLY|NOBMP,]
             [PAGESIZE(nnn),]         default 60 lines
             [PRINTAT(HOUR|STOP|EOF|nnnn),]
             [SELECT(psbname,...)|NOSELECT(psbname,...)]
[IMSPAMON     ALTSCHED]
 IMSPAMON     EXECUTE[(NEW|BATCH)]
```

START
: Global Start date and time

STOP
: Global Stop date and time

DDNAME
: Monitor Input File ddname

DETAILDDNAME
: Summary reports output ddname

STATSDDNAME
: Trace data set file name

DISTRIBUTIONS
: Include Distributions in reports

REGIONS
: Break down reports by Region

BMPONLY
: Only include BMP regions in reports

NOBMP
: Exclude BMP regions from reports

MINIWAIT
: Minimum VSAM IWAIT elapsed time, in milliseconds

PAGESIZE
: Number of print lines per page

PRINTAT
: Report break point specifies when reports are written

SELECT **or** NOSELECT
: Program (PSB) names to include or exclude

ALTSCHED
: Do not include wait-for-input events when calculating the schedule count

BATCH
: Input data is DB Monitor

Example

Total System IWAIT Summary and Detail Reports for an IMS DB System:

```
IMSPAMON     START(2018/06/25,06:30:00:00),
             STOP(2018/06/25,06:45:00:00),
             DDNAME(SUMMRPT),
             DETAILDDNAME(DETLRPT),
             STATSDDNAME(IPISTOUT),
             PAGESIZE(60),
             PRINTAT(STOP),
             MINIWAIT(5),
             NOSELECT(PSB2R*,PSB2T*)
IMSPAMON     TSIWAIT(SUMMARY,DETAIL,DDNAME(IWTSUMMY))
IMSPAMON     EXECUTE(BATCH)
```

Related reference:

"Monitor Global Options" on page 499
The IMS PA Monitor Global Options define output data sets and general control information that apply to all active reports within a Report Set.

DISTRIBUTION: Distributions Options

The Distributions Options describe the layout of distribution graphs which show the dispersion of the values of certain performance measures.

Format

```
name      DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]
```

where the Distribution *name* is either: ELAP/SCH, ELAP/CAL, ELAP/IWT, IWTS/CAL, IWTSUMMY, DDIWELAP, FPBSCNT, FPBGQLN, FPBGELP, FPOTACT, FPOTWTA, FPOTBOQ, FPRCLIW, COMMELP, COMMIWE, COMMLFR, COMMLFT, COMMLFI, MSCQLEN, MSCQELP.

See "Distribution and Report cross-reference" on page 161 for the list of these Distributions, their titles, and the reports they apply to.

Example

Database IWAIT Analysis Report by Region with Distributions:

```
          IMSPAMON     DISTRIBUTIONS,
                       REGIONS
          IMSPAMON     DBIWAITANAL(DISTRIBUTIONS)
          IMSPAMON     EXECUTE
DDIWELAP  DISTRIBUTION LIMITS(1,5,10,30,50,100,300,500,1000),
                       TITLE('Sc Mil Mic'),
                       MULTIPLY(1000),
                       EDITMASK('ZZZ.ZZ9.999')
```

Related reference:

"Distributions Options" on page 503
The Distributions Options allow you to request up to four distribution graphs by specifying the names of Distributions which define the layout of the graphs.

TIMEREPORT: Transactions by Time Period Options

The TIMEREPORT operand of the IMSPAMON batch command specifies control information for the Transactions by Time Period report, which is optionally produced by the Region Analysis and Application Detail reports.

Format

```
IMSPAMON     TIMEREPORT(
            [TIMES(t1,t2,t3,...,t14),]
            [PERCENT|COUNT,]
            [REGION,]
            [FROM(date,time),]
            [TO(date,time)])
```

TIMES List of fourteen (14) comma separated, ascending times in the format *hh*:*mm*:*ss* to be used as report time ranges

PERCENT
Report transaction counts as a percentage of total transactions

COUNT Report transaction counts as a number

REGION Break down reports by Region

Examples

Region Analysis Report:

```
IMSPAMON     TIMEREPORT(
             TIMES(00:00,07:00,08:00,09:00,10:00,11:00,12:00,
             13:00,14:00,15:00,16:00,17:00,18:00,19:00),
             COUNT,
             FROM(2014/08/13,),TO(2014/08/14,))
IMSPAMON     REGANAL(TIMEREPORT)
IMSPAMON     EXECUTE
```

Application Detail Report with Application Grouping:

```
IMSPAMON     APPLICATION(PSB2,(PSB2R*,PSB2T*,PSB2A*))
IMSPAMON     TIMEREPORT(
             TIMES(09:25,09:25:10,09:25:20,09:25:30,
             09:25:40,09:25:50,09:26,,,,,,),
             PERCENT,
             FROM(2018/06/19,09:25:00:00),
             TO(2018/06/19,09:30:00:00))
IMSPAMON     APPLGRP(TIMEREPORT)
IMSPAMON     EXECUTE
```

Related reference:

"Transactions by Time Period Options" on page 505
This panel maintains the time periods and other options used by the Transactions by Time Period report, which is optionally included in the Region Analysis and Application Detail reports.

APPLICATION: Application Grouping Options

The Application Grouping Options specify one or more groups of Program (PSB) names to appear as line items in the Program Summary and Region Analysis reports, and in the heading of the Application Detail report.

Format

```
IMSPAMON     APPLICATION(grpname1,(a1,a2,...),
                        grpname2,(b1,b2,...),...)
```

Example

Program Summary Report with Application Grouping:

```
IMSPAMON     APPLICATION(PROGAGRP,(A*),PROGBGRP,(B*,C*,D*))
IMSPAMON     PROGSUM
IMSPAMON     EXECUTE
```

Related reference:

"Application Grouping Options" on page 507
The Application Grouping Options define groups of records based on Program (PSB) name.

DDGROUP: DDname Grouping Options

The DDname Grouping Options specify one or more groups of ddnames to appear as line items in the Database IWAIT Summary report and in the heading of the Database IWAIT Analysis (DDgroup) report.

Format

```
IMSPAMON     DDGROUP(grpname1,(a1,a2,...),
                     grpname2,(b1,b2,...),...)
```

Example

Database IWAIT Analysis Report with DDname Grouping, no Distributions:

```
IMSPAMON     DDGROUP(DD1,(A*),DD2,(B*,C*,D*))
IMSPAMON     DBIWAITANAL
IMSPAMON     EXECUTE
```

Related reference:

"DDname Grouping Options" on page 508
DDname Grouping Options define groups of records based on DDnames.

ESAFOpts: ESAF Integration Option

The ESAF Integration Option controls whether External Subsystem calls are integrated into all Region and Program/Trancode reports.

Format

```
IMSPAMON     ESAFOpts(CALLs|NOCALLs)
```

CALLS
: ESAF call statistics are reported for each subsystem and contribute to the total call and IWAIT counts for regions and program/trancodes.

NOCALLS
: ESAF call statistics are not included.

Example

Program Summary with ESAF Integration:

```
IMSPAMON     ESAFO(CALL)
IMSPAMON     PROGSUM
IMSPAMON     EXECUTE
```

Related reference:

"ESAF Integration Option" on page 509
When the ESAF Integration Option is activated, ESAF call statistics are reported for each subsystem and contribute to the total call and IWAIT counts for regions and program/trancodes.

ALTSEQ: Alternate Sequencing Options

Summarized monitor reports can be ordered in an alternate sequence. By default, the reports are ordered by name, such as Region ID, Program, Transaction Code and Database.

Alternate Sequencing changes this sequence to order (in descending sequence) by any one of the following:

Occupancy
: The elapsed time that the resource is scheduled or in use. For example, the busiest regions or programs.

Calls
: The time spent by the resource performing DL/I or other types of calls. For example, transactions with the most DL/I call activity.

Delay
: The time spent by the resource waiting for IWAIT events to complete. For example, the databases which had to wait the longest for I/O to complete.

When Alternate Sequencing is used, a limit can also be specified to restrict the number of resources reported. You can specify a fixed number, for example the 10 worst performing databases, or you can specify a percentage, for example the top 10% busiest regions.

Format

```
IMSPAMON     ALTSEQ(
                   [NAME|OCCupancy|CALLs|DELAY,]
                   [LIMit(nnn[%])])          default 100%
```

NAME
: Order the report by name.

OCCUPANCY
Order the report by the elapsed time scheduled or in use.
CALLS
Order the report by the volume of DL/I activity (or other types of calls).
DELAY
Order the report by the time spent waiting for IWAITs to complete.
LIMIT Report only the first *nnn* or *nnn*% of the resource.

Example

Region Summary with sorting by occupancy and limited to the 5 worst regions:

```
IMSPAMON     ALTSEQ(OCC,LIMIT(5))
IMSPAMON     REGSUM
IMSPAMON     EXECUTE
```

Related reference:

"Alternate Sequencing Options" on page 509
Alternate sequencing changes the default "name" order of a report (where the "name" field depends on the report; for example, Region ID, Program name, Transaction Code, or Database name) to descending order of one of the following: Occupancy, Calls, or Delay. You can also limit reporting to the worst performers.

SCHEDTRAN: Schedule/Transaction Summary report

The SCHEDTRAN operand of the IMSPAMON batch command requests the Schedule/Transaction Summary report.

Format

```
IMSPAMON     SCHEDTRAN
```

Example

```
IMSPAMON     DDNAME(SUMMRPT)
IMSPAMON     SCHEDTRAN
IMSPAMON     EXECUTE
```

Related reference:

"Schedule/Transaction Summary report" on page 511
There are no panel options specific to this report.

REGSUM: Region Summary report

The REGSUM operand of the IMSPAMON batch command requests the Region Summary report.

Format

```
          IMSPAMON      REGSUM
          IMSPAMON      EXECUTE
[name     DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Specify up to 4 Distributions with *name* either: ELAP/SCH, ELAP/CAL, ELAP/IWT, IWTS/CAL.

Example

```
IMSPAMON     DDNAME(SUMMRPT)
IMSPAMON     REGSUM
IMSPAMON     EXECUTE
```

Related reference:

"Region Summary report" on page 511
There are no panel options specific to this report. The report can only be activated or deactivated.

PROGSUM: Program Summary report

The PROGSUM operand of the IMSPAMON batch command requests the Program Summary report.

Format

```
IMSPAMON     PROGSUM
```

Example

```
IMSPAMON     DDNAME(SUMMRPT)
IMSPAMON     PROGSUM
IMSPAMON     EXECUTE
```

Related reference:

"Program Summary report" on page 511
There are no panel options specific to this report. The report can only be activated or deactivated.

IWAITSUM: Database IWAIT Summary report

The IWAITSUM operand of the IMSPAMON batch command requests the Database IWAIT Summary report.

Format

```
IMSPAMON     IWAITSUM
```

Example

```
IMSPAMON     DDNAME(SUMMRPT)
IMSPAMON     IWAITSUM
IMSPAMON     EXECUTE
```

Related reference:

"Database IWAIT Summary report" on page 511
There are no panel options specific to this report. The report can only be activated or deactivated.

REGANAL: Region Analysis report

The REGANAL operand of the IMSPAMON batch command requests the Region Analysis report.

Format

```
          IMSPAMON      REGANAL([REGDETL,]
                                [PROGSUM,]
                                [IWAITSUM,]
                                [TIMEREPORT])
          IMSPAMON      EXECUTE
[name     DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Specify up to 4 Distributions with *name* either: ELAP/SCH, ELAP/CAL, ELAP/IWT, IWTS/CAL

Any combination of the following reports can be requested.

REGDETL
: Region Detail

PROGSUM
: Program Summary

IWAITSUM
: Database IWAIT Summary

TIMEREPORT
: Transactions by Time Period. See also "TIMEREPORT: Transactions by Time Period Options" on page 545.

Example

All reports:

```
          IMSPAMON      DETAILDDNAME(DETLRPT)
          IMSPAMON      TIMEREPORT(
                        TIMES(12:05,12:05:10,12:05:20,12:05:30,
                        12:05:40,12:05:50,12:06,,,,,,),
                        COUNT,
                        FROM(9999/08/15,12:05:00:00),
                        TO(9999/08/15,12:06:00:00))
          IMSPAMON      REGANAL(REGDETL,PROGSUM,IWAITSUM,TIMEREPORT)
          IMSPAMON      EXECUTE
```

Related reference:

"Region Analysis report" on page 512
The options for the Region Analysis report are described here.

APPLGRP: Application Detail report

The APPLGRP operand of the IMSPAMON batch command requests the Application Detail report.

Format

```
          IMSPAMON      APPLGRP([PROGSUM,]
                                [TIMEREPORT])
          IMSPAMON      APPLICATION(grpname1,(a1,a2,...),
                                    grpname2,(b1,b2,...),...)
```

One or both of the following reports can be requested:

PROGSUM
: Program Summary

TIMEREPORT
: Transactions by Time Period. See also “TIMEREPORT: Transactions by Time Period Options” on page 545.

Application Groups must be specified for the report to be produced.

Example

Both reports, and Application Grouping:

```
         IMSPAMON     DETAILDDNAME(DETLRPT)
         IMSPAMON     APPLICATION(PROGGRP1,(A*,B*,K*))
         IMSPAMON     TIMEREPORT(COUNT,
                      TIMES(00:00,07:00,08:00,09:00,10:00,11:00,12:00,
                      13:00,14:00,15:00,16:00,17:00,18:00,19:00))
         IMSPAMON     APPLGRP(PROGSUM,TIMEREPORT)
         IMSPAMON     EXECUTE
```

Related reference:

“Application Detail report” on page 512
The options of the Application Detail report are described here.

IWAITANAL: Database IWAIT Analysis report

The IWAITANAL operand of the IMSPAMON batch command requests the Database IWAIT Analysis report.

Format

```
          IMSPAMON      IWAITANAL([DISTRIBUTIONS])
          IMSPAMON      EXECUTE
[DDIWELAP DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

DISTRIBUTIONS
: Include distributions in the report

Examples

No Distributions:

```
         IMSPAMON     DETAILDDNAME(DETLRPT)
         IMSPAMON     IWAITANAL
         IMSPAMON     EXECUTE
```

By Region, with Distribution taking defaults:

```
         IMSPAMON     DETAILDDNAME(DETLRPT),
                      REGIONS,
                      DISTRIBUTIONS
         IMSPAMON     IWAITANAL(DISTRIBUTIONS)
         IMSPAMON     EXECUTE
DDIWELAP DISTRIBUTION
```

Related reference:

“Database IWAIT Analysis report” on page 513
The options for Database IWAIT Analysis reports are described here.

EXCEPTION: Performance Exception reports

The EXCEPTION operand of the IMSPAMON batch command requests the suite of Performance Exceptions reports.

Format

```
         IMSPAMON      EXCEPTION([LISTING,]
                                 [INTENT,]
                                 [POOL,]
                                 [DEADLOCK,]
                       [IGNSCHED,]
                       [CALLELAP(nnnnn),]       msecs
                       [IWTELAP(nnnnn),]        msecs
                       [IWTCALL(nnnnn),]        msecs
                       [PAGES(nnn),]            default 9 lines
                       [DDNAME(ddname)])        default EXCPTRPT
         IMSPAMON       EXECUTE
[name    DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Specify up to 3 Distributions with *name* either: ELAP/CAL, ELAP/IWT, IWTS/CAL

Any combination of the following reports may be requested:

LISTING
: Exception Listing

INTENT
: Intent Failure Summary

POOL Pool Space Failure Summary

DEADLOCK
: Deadlock Event Summary

Other report options for the Exception Listing:

IGNSCHED
: Suppress printing of Specifically Created Schedule and Forced Schedule End lines in the Exception Listing report. Refer to the section "Performance Exception reports" in the *IMS Performance Analyzer for z/OS: Report Reference* for further details.

CALLELAP
: Maximum allowable DL/I Call elapsed time

IWTELAP
: Maximum allowable IWAIT elapsed time

IWTCALL
: Maximum allowable number of IWAITs per DL/I Call

PAGES
: Maximum number of pages for the Exception Listing

The Distributions are used to provide the threshold values if CALLELAP, IWTELAP, or IWTCALL are not specified.

Examples

Exception Listing (taking defaults) and Deadlock Event Summary:

```
IMSPAMON     EXCEPTION(LISTING,DEADLOCK)
IMSPAMON     EXECUTE
```

All reports, with threshold values and page limit specified for the Exception Listing:

```
IMSPAMON     EXCEPTION(
             CALLELAP(50),
             IWTELAP(20),
             IWTCALL(2),
             PAGES(15),DDNAME(EXCPTRPT))
IMSPAMON     EXECUTE
```

Related reference:

"Performance Exception reports" on page 514
The options for Performance Exception reports are described here.

ENQTRACE: Enqueue/Dequeue Trace report

The ENQTRACE operand of the IMSPAMON batch command requests the Enqueue/Dequeue Trace report.

Format

```
IMSPAMON     ENQTRACE([TRACE,]
                      [SUMMDB,]
                      [SUMMTC,]
                [DDNAME(ddname)])        default ENQDD
```

Any combination of the following reports can be requested:

TRACE
: Detailed Trace

SUMMDB
: Summary by Database

SUMMTC
: Summary by Transaction Code

Examples

Taking defaults. Produces the two Summary reports:

```
IMSPAMON     ENQTRACE
IMSPAMON     EXECUTE
```

Detailed Trace report:

```
IMSPAMON     ENQTRACE(TRACE)
IMSPAMON     EXECUTE
```

Related reference:

"Enqueue/Dequeue Trace report" on page 516
The IMS PA Enqueue/Dequeue Trace report traces a maximum of nine regions.

HISTOGRAM: Region Histogram (Monitor) report

The HISTOGRAM operand of the IMSPAMON batch command requests the Region Histogram report.

Format

```
IMSPAMON     HISTOGRAM([REGIONS (r1,r2,r5-r8,...),]
            [INTERVAL(nnnnn),]       default 1000 msec
            [CPULIMIT(nnnnnnnn),]    msec
            [SKIPPRINT(nnnnn),]
            [FROM(date,time),]
            [TO(date,time),]
            [DDNAME(ddname)])        default RGNHIST
```

REGIONS
: List of up to 13 Region (PST) IDs

INTERVAL
: Number of milliseconds between output lines

CPULIMIT
: CPU Time Limit (milliseconds) before a transaction is flagged

SKIPPRINT
: Number of duplicate lines before printing is skipped

Example

```
IMSPAMON     HISTOGRAM(REGIONS(1-5,7,13),
             INTERVAL(1000),
             CPULIMIT(20),
             SKIPPRINT(5),
             FROM(2018/05/27,12:10:00:00),
             TO(2018/05/27,12:12:00:00))
IMSPAMON     EXECUTE
```

Related reference:

"Region Histogram report" on page 517

TSIWAIT: Total System IWAIT reports

The TSIWAIT operand of the IMSPAMON batch command requests the Total System IWAIT reports.

Format

```
IMSPAMON      TSIWAIT([SUMMARY,]
                      [DETAIL,]
             [DDNAME(ddname)])       default IWTSUMMY
IMSPAMON      EXECUTE
[IWTSUMMY DISTRIBUTION [LIMITS(value1,...,value9),]
             [TITLE('text'),]
             [MULTIPLY(nnnn),]
             [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

One or both of the following reports can be requested:

SUMMARY
: Total System IWAIT Summary

DETAIL
: Total System IWAIT Detail

A Distribution can optionally be specified for the Detail report.

Examples

Taking defaults:

```
         IMSPAMON     TSIWAIT
         IMSPAMON     EXECUTE
```

Summary Report:

```
         IMSPAMON     TSIWAIT(SUMMARY,DDNAME(IWTSUMMY))
         IMSPAMON     EXECUTE
```

Detail report with a user-specified Distribution:

```
         IMSPAMON     TSIWAIT(DETAIL)
         IMSPAMON     EXECUTE
IWTSUMMY DISTRIBUTION LIMITS(1,10,15,50,100,250,350,600,800),
                      TITLE('Sc Mil Mic'),MULTIPLY(1000),
                      EDITMASK('ZZZ.ZZ9.999')
```

Summary and Detail reports, no Distribution:

```
         IMSPAMON     TSIWAIT(SUMMARY,DETAIL,DDNAME(IWTSUMMY))
         IMSPAMON     EXECUTE
```

Related reference:

"Total System IWAIT reports" on page 519
The options for Total System IWAIT reports are described here.

PSBREPORTS: Program Activity Detail report

The PSBREPORTS operand of the IMSPAMON batch command requests the Program Activity Detail reports.

Format

```
         IMSPAMON      PSBREPORTS(
                      [BYPREPORT|BYPSB|(BYREPORT,BYPSB),]
                      [FUNCTION,]
                      [SEGNAME,]
                      [DDNAME,]
                      [FUNC-SEGNAME,]
                      [FUNC-DDNAME,]
                      [DDNAME-PSB])
         IMSPAMON      EXECUTE
[name    DISTRIBUTION [LIMITS(value1,...,value9),]
                      [TITLE('text'),]
                      [MULTIPLY(nnnn),]
                      [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

for up to 4 Distributions with *name* ELAP/SCH, ELAP/CAL, ELAP/IWT, or IWTS/CAL

The report formats are:

BYREPORT
: PSB Details

BYPSB
: PSB-Transaction Code Analysis

(BYREPORT,BYPSB)
: PSB Details with PSB-Transaction Code data

DDNAME-PSB
: DDname by PSB-Transaction Code

If either BYREPORT or BYPSB or both are specified, at least one type of report must be specified. The report types can be specified in any combination. Note that the PSB Details PCB Totals report is always produced. The report types are:

FUNCTION
: PSB Details PCB Totals
PSB Details by Function Code

SEGNAME
: PSB Details PCB Totals
PSB Details by Segment Name Feedback

DDNAME
: PSB Details PCB Totals
PSB Details PCB Totals (DD)
PSB Details by ddname IWAITed On

FUNC-SEGNAME
: PSB Details PCB Totals
PSB Details by Function Code-Segment Name

FUNC-DDNAME
: PSB Details PCB Totals
PSB Details PCB Totals (DD)
PSB Details by Function Code (DD)
PSB Details by Function Code-ddname

Example

PSB Details by Function Code and by Segment Name Feedback, and ddname by PSB-Transaction Code:

```
IMSPAMON     DETAILDDNAME(DETLRPT)
IMSPAMON     PSBREPORTS(
             BYREPORT,
             FUNCTION,
             SEGNAME,
             DDNAME-PSB)
IMSPAMON     EXECUTE
```

Related reference:

"Program Activity Detail reports" on page 520
The options for the Program Activity Detail reports are described here.

TRACE: Program Trace report

The TRACE operand of the IMSPAMON batch command requests Program Trace reports.

Format

```
         IMSPAMON      TRACE([PSBNAME(name),]
                             [TRANCODE(code),]
                             [REGION(PST number),]
                       [FROM(date,time),]
                       [TO(date,time),]
                       [SUMMARY|SHORT|LONG,]
                       [LIMIT(nnnnnnnn),]
                       [DDNAME(ddname)])        default PGMTRACE
         IMSPAMON       EXECUTE
[name    DISTRIBUTION  [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Specify up to 3 Distributions with *name* ELAP/CAL, ELAP/IWT, or IWTS/CAL.

Any number of traces can be requested as long as a unique ddname is used for each trace. For each trace, any combination of PSBNAME, TRANCODE, or REGION can be specified, but at least one must be specified.

PSBNAME
: Program (PSB) name

TRANCODE
: Transaction Code

REGION
: Region PST ID

Other report options:

SUMMARY
: One page summary per trace

SHORT
: One report line per DL/I Call

LONG
: One report line per DL/I Call, plus one line per IWAIT

LIMIT
: Maximum number of schedules to be processed in this trace

Example

Two traces, the first for region 13, the second for PSB PMENU and transaction code STOCK:

```
IMSPAMON     TRACE(REGION(13),
             FROM(2018/06/25,02:00:00:00),
             SHORT,
             LIMIT(50),
             DDNAME(TRACE1))
IMSPAMON     TRACE(PSBNAME(PMENU),
                   TRANCODE(STOCK),
             FROM(2018/06/25,02:00:00:00),
             TO(2018/06/25,02:15:00:00),
             LONG,
             LIMIT(100),
             DDNAME(TRACE2))
IMSPAMON     EXECUTE
```

Related reference:

"Program Trace report" on page 522
The options for Program Trace reports are described here.

VSAMSTAT: Batch VSAM Statistics report

The VSAMSTAT operand of the IMSPAMON batch command requests the Batch VSAM Statistics report. This report provides similar output to the DFSUTR30 VSAM Statistics report.

Format

```
IMSPAMON     VSAMSTAT(
            [DDNAME(ddname)])        default VSAMRPT
```

Example

```
IMSPAMON     VSAMSTAT
IMSPAMON     EXECUTE
```

Related reference:

"Batch VSAM Statistics report" on page 523
The options for the Batch VSAM Statistics report are described here.

STATIS: Buffer Pool and Latch Statistics reports

The STATIS operand of the IMSPAMON batch command requests the Buffer Pool and Latch Statistics reports.

The Buffer Pool and Latch Statistics reports are:
- Message Queue Pool
- Database Buffer Pool
- VSAM Buffer Pool
- Message Format Buffer Pool
- Latch Statistics

Format

```
IMSPAMON     STATIS(
            [DDNAME(ddname)])        default STATRPT
```

Example

```
IMSPAMON     STATIS
IMSPAMON     EXECUTE
```

Related reference:

"Buffer Pool and Latch Statistics reports" on page 524
The options for the Buffer Pool and Latch Statistics reports are described here.

COMMS: Communication reports

The COMMS operand of the IMSPAMON batch command requests the Communication reports.

Format

```
         IMSPAMON      COMMS([SUMMARY,]
                             [IWAIT,]
                             [LINEFUNC,]
                       [DDNAME(ddname)])        default COMMRPT
         IMSPAMON       EXECUTE
[name    DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Specify up to 5 Distributions with *name* either: COMMELP, COMMIWE, COMMLFR, COMMLFT, COMMLFI.

Any combination of the following reports can be requested:

SUMMARY
: Communication Summary

IWAIT
: Communication IWAIT

LINEFUNC
: Line Functions

Example

All reports requested, and Distributions specified for the first two reports:

```
          IMSPAMON     COMMS(SUMMARY,IWAIT,LINEFUNC)
          IMSPAMON     EXECUTE
COMMELP   DISTRIBUTION LIMITS(1,2,4,8,16,32,64,128,256),MULT(1000),
                       TITLE('Sc Mil Mic'),EDITMASK('ZZZ.ZZ9.999')
COMMIWE   DISTRIBUTION LIMITS(1,2,4,8,16,32,64,128,256),MULT(1000),
                       TITLE('Sc Mil Mic'),EDITMASK('ZZZ.ZZ9.999')
```

Related reference:

"Communication reports" on page 525
The options for Communication reports are described here.

MSC: MSC reports

The MSC operand of the IMSPAMON batch command requests the MSC reports.

Format

```
          IMSPAMON      MSC([SUMMARY,]
                            [TRAFFIC,]
                            [QUEUING,]
                       [DDNAME(ddname)])        default MSCRPT
          IMSPAMON      EXECUTE
[MSCQLEN  DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
[MSCQELP  DISTRIBUTION [LIMITS(value1,...,value9),]
                       [TITLE('text'),]
                       [MULTIPLY(nnnn),]
                       [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Any combination of the following reports can be requested:

SUMMARY
: MSC Summary

TRAFFIC
MSC Traffic
QUEUING
MSC Queuing

Example

All reports, both Distributions:

```
         IMSPAMON     MSC(SUMMARY,TRAFFIC,QUEUING)
         IMSPAMON     EXECUTE
MSCQLEN  DISTRIBUTION LIMITS(1,2,3,4,5,10,15,30,90),
                      TITLE('Q Length'),EDITMASK('ZZZ,ZZZ,ZZ9')
MSCQELP  DISTRIBUTION LIMITS(1,5,10,50,100,500,1000,5000,10000),
                      MULT(1000),
                      TITLE('Sc Mil Mic'),EDITMASK('ZZZ.ZZ9.999')
```

Related reference:

"MSC reports" on page 527
The options for MSC reports are described here.

ESAF: ESAF (Monitor) report

The ESAF operand of the IMSPAMON batch command requests the External Subsystem report.

Format

```
         IMSPAMON     ESAF(
                     [DDNAME(ddname)])        default ESAFRPT
```

Example

```
         IMSPAMON     ESAF
         IMSPAMON     EXECUTE
```

Related reference:

"ESAF report" on page 528
The options for the ESAF report are described here.

SYNCCOUT: Synchronous Callout report

The SYNCCOUT operand of the IMSPAMON batch command requests the Synchronous Callout report.

Format

```
         IMSPAMON     SYNCCOUT(
                     [DDNAME(ddname)])        default SYNCCOUT
```

Example

```
         IMSPAMON     SYNCCOUT
         IMSPAMON     EXECUTE
```

Related reference:

"Synchronous Callout report" on page 528
The Synchronous Callout report provides a detailed analysis of sync callout activity in regions and by application programs. Individual subsystem activity is broken down by Region and Program, with statistics of sync callout activity per Transaction.

FPRSCONT: DEDB Resource Contention report

The FPRSCONT operand of the IMSPAMON batch command requests the DEDB Resource Contention report.

Format

```
         IMSPAMON      FPRSCONT(
                      [DDNAME(ddname)])       default FPRSCONT
         IMSPAMON      EXECUTE
[FPRCLIW DISTRIBUTION [LIMITS(value1,...,value9),]
                      [TITLE('text'),]
                      [MULTIPLY(nnnn),]
                      [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Examples

Taking defaults, no distributions:

```
         IMSPAMON     FPRSCONT
         IMSPAMON     EXECUTE
```

With distributions:

```
         IMSPAMON     FPRSCONT(DDNAME(FPRSCONT))
         IMSPAMON     EXECUTE
FPRCLIW  DISTRIBUTION LIMITS(1,2,4,8,16,32,64,128,256),
                      TITLE('Sc Mil Mic'),
                      MULTIPLY(1000),
                      EDITMASK('ZZZ.ZZ9.999')
```

Related reference:

"DEDB Resource Contention report" on page 529
The options for the DEDB Resource Contention report are described here.

FPBUFFER: Fast Path Buffer Statistics report

The FPBUFFER operand of the IMSPAMON batch command requests the Fast Path Buffer Statistics report.

Format

```
         IMSPAMON      FPBUFFER(
                      [DDNAME(ddname)])       default FPBUFFER
         IMSPAMON      EXECUTE
[FPBSCNT DISTRIBUTION [LIMITS(value1,...,value9),]
                      [TITLE('text'),]
                      [MULTIPLY(nnnn),]
                      [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

Examples

Taking defaults, no distributions:

```
         IMSPAMON     FPBUFFER
         IMSPAMON     EXECUTE
```

With distributions:

```
         IMSPAMON     FPBUFFER(DDNAME(FPBUFFER))
         IMSPAMON     EXECUTE
FPBSCNT  DISTRIBUTION LIMITS(100,200,300,400,500,600,700,800,900),
                      TITLE('Counts'),
                      MULTIPLY(1),
                      EDITMASK('ZZZ,ZZZ,ZZ9')
```

Related reference:

"Fast Path Buffer Statistics report" on page 530
The options for the Fast Path Buffer Statistics report are described here.

FPBALG: BALG/Shared EMHQ report

The FPBALG operand of the IMSPAMON batch command requests the BALG/Shared EMHQ report.

Format

```
         IMSPAMON      FPBALG(
                      [DDNAME(ddname)])       default FPBALG
         IMSPAMON      EXECUTE
[name    DISTRIBUTION [LIMITS(value1,...,value9),]
                      [TITLE('text'),]
                      [MULTIPLY(nnnn),]
                      [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

for up to 2 Distributions with *name* either FPBGQLN or FPBGELP

Examples

Taking defaults, no distributions:

```
         IMSPAMON      FPBALG
         IMSPAMON      EXECUTE
```

With both distributions:

```
         IMSPAMON      FPBALG(DDNAME(FPBALG))
         IMSPAMON      EXECUTE
FPBGQLN  DISTRIBUTION  LIMITS(1,2,3,4,5,10,15,30,90),
                       TITLE('Length'),
                       MULTIPLY(1),
                       EDITMASK('ZZZ,ZZZ,ZZ9')
FPBGELP  DISTRIBUTION  LIMITS(1,5,10,50,100,500,1000,5000,10000),
                       TITLE('Sc Mil Mic'),
                       MULTIPLY(1000),
                       EDITMASK('ZZZ.ZZ9.999')
```

Related reference:

"BALG/Shared EMHQ Analysis report" on page 531
The options for the BALG/Shared EMHQ Analysis report are described here.

FPOTHRD: OTHREAD Analysis report

The FPOTHRD operand of the IMSPAMON batch command requests the OTHREAD Analysis report.

Format

```
        IMSPAMON      FPOTHRD(
                     [DDNAME(ddname)])       default FPOTHRD
        IMSPAMON      EXECUTE
[name   DISTRIBUTION [LIMITS(value1,...,value9),]
                     [TITLE('text''),]
                     [MULTIPLY(nnnn),]
                     [EDITMASK('char.mask')|EDITMASK(hex.mask)]]
```

for up to three Distributions with *name* FPOTACT, FPOTWTA, or FPOTBOQ

Examples

Taking defaults, no distributions:

```
        IMSPAMON      FPOTHRD
        IMSPAMON      EXECUTE
```

With all three distributions:

```
        IMSPAMON      FPOTHRD(DDNAME(FPOTHRD))
        IMSPAMON      EXECUTE
FPOTACT DISTRIBUTION  LIMITS(100,200,300,400,500,600,700,800,900)
                      TITLE('Counts'),
                      MULTIPLY(1),
                      EDITMASK('ZZZ,ZZZ,ZZ9')
FPOTWTA DISTRIBUTION  LIMITS(10,20,30,40,50,60,70,80,90)
                      TITLE('Counts'),
                      MULTIPLY(1),
                      EDITMASK('ZZZ,ZZZ,ZZ9')
FPOTBOQ DISTRIBUTION  LIMITS(10,20,30,40,50,60,70,80,90)
                      TITLE('Counts'),
                      MULTIPLY(1),
                      EDITMASK('ZZZ,ZZZ,ZZ9')
```

Related reference:

"OTHREAD Analysis report" on page 532
The options for the OTHREAD Analysis report are described here.

FPVSOSUM: VSO Summary report

The FPVSOSUM operand of the IMSPAMON batch command requests the VSO Summary report.

Format

```
        IMSPAMON      FPVSOSUM(
                     [DDNAME(ddname)])       default FPVSOSUM
        IMSPAMON      EXECUTE
```

Example

Taking defaults:

```
IMSPAMON     FPVSOSUM
IMSPAMON     EXECUTE
```

Related reference:

"VSO Summary report" on page 533
The options for the VSO Summary report are described here.

SLOGTRC: Monitor Record Trace report

The SLOGTRC operand of the IMSPAMON batch command requests the Monitor Record Trace report.

Format

```
IMSPAMON     SLOGTRC(
            [CODES('list'),]        default '01-99'
            [PAGES(number),]        default 100 pages
            [DDNAME(ddname)])       default SLOGTRC
```

Figure 267. Monitor Trace Report Options

CODES
: Record code selection list. '01-99' for all monitor record codes. A subset of monitor record codes can be selected.

PAGES
: Page limit.

Examples

Taking defaults:

```
IMSPAMON     SLOGTRC
IMSPAMON     EXECUTE
```

Selecting only IWAIT records:

```
IMSPAMON     SLOGTRC(
             CODES('14-39,56-57,66-69,72-73,94'),
             PAGES(10))
IMSPAMON     EXECUTE
```

Related reference:

"Monitor Record Trace report" on page 534
The options for the Monitor Record Trace report are described here.

Part 7. IMS Connect reporting

This part describes how to request and run IMS Connect reports and extracts using the dialog and batch commands. From a Connect Report Set you can also request Form-based transit reporting for a group that combines IMS and Connect systems to get a complete end-to-end picture of IMS Connect transactions.

Chapter 24. Requesting IMS Connect reports

IMS PA provides a comprehensive set of reports from the IMS Connect performance data collected by IBM IMS Connect Extensions for z/OS (5655-S56). The reports provide a summary and detailed analysis of IMS Connect transaction transit time, resource usage and resource availability, and exception events.

Before you begin

Prior to using IMS PA for IMS Connect reporting, you must implement IMS Connect Extensions Event Collection. For information about how to set up and activate Event Collection, see the *IBM IMS Connect Extensions for z/OS: User's Guide* (SC19-3632). IMS PA analyzes and reports against the Event Collection data contained in Journal data sets, archive or active.

Procedure

To generate IMS Connect reports and extracts:

1. Specify the IMS Connect Extensions Definitions Data Set.
   a. Select option 0 **IMS PA Profile** from the IMS PA primary option menu
   b. Select option 5 **IMS Connect Extensions Definitions data set** to specify the name of the data set.

   Te IMS Connect Extensions Definitions Data Set is allocated as part of your implementation of IMS Connect Extensions. It contains the definitions for your IMS Connect systems and their Journal data sets.
2. Specify your report requests.

   IMS Connect reports are requested in the same way as the Log and Monitor reports, via Report Sets. Connect reports are denoted by CEX (Connect Extensions).
   a. Select option **3 Report Sets** from the Primary Option Menu to specify your report requests.
   b. Use the NEW command to define a new Connect Report Set.
   c. Submit the Report Set in the usual way. You will be prompted to specify the required IMS Connect system and the date/time range to be reported. IMS PA will use the IMS Connect Extensions Automated File Selection utility to automatically select the required Journal data sets for the specified reporting interval. This is similar to how DBRC Log Selection automatically selects Log files for Log reporting.

      For further information on running Report Sets, see "Running Report Sets" on page 127.
3. Review IMS Connect System Definitions and their Journal data sets.
   a. Select option 9 **IMS Connect** from theIMS PA primary option menu to view the IMS Connect systems defined in the IMS Connect Extensions Definitions Data Set.
   b. From here, you can request IMS Connect reports in two ways:
      - When you request reporting for an IMS Connect System, IMS PA uses the IMS Connect Extensions Automated File Selection utility to automatically select the required Journal data sets for the specified reporting interval.

- When you select an IMS Connect System, the list of Journal data sets is displayed. Select the required data set for reporting.

Connect Report Sets

IMS Connect reports are specified in a Report Set of type **CEX**.

Report Sets are stored in a Reports Sets data set. If you have not specified a Report Sets data set, IMS PA will allocate a data set for you with default characteristics. To change the Report Sets data set, use option0.4 **IMS PA Control Data Sets** from the IMS PA primary option menu, or you can use the **Options** menu in the action bar.

To specify Connect reports:

1. Select option 3 **Report Sets** from the IMS PA primary option menu. A list of the Report Sets in the nominated Report Sets data set is displayed.
2. Define a new Connect Report Set or edit an existing one. Figure 268 shows how to:
   - Enter the NEW command to define a new Connect Report Set (type CEX). For further information, see "Creating new Report Sets" on page 126.
   - Enter line action **S** to select a Report Set for edit.

```
 File  View  Options  Help
──────────────────────────────────────────────────────────────────────────────
                                Report Sets                    Row 1 to 3 of 3
Command ===> NEW CONNECT1 CEX                                 Scroll ===> PAGE

Report Sets Data Set . . . : IMSPA.RSCTL

/     Name    Type           Description               Changed        ID
S    CEXAMPLE CEX  Connect Report Set Example       2014/07/15 10:48 IMSPA
___  SAMPLOG  LOG  Sample Log Report Set            2014/07/17 12:02 IMSPA
___  SAMPMON  MON  Sample Monitor Report Set        2014/07/02 14:22 IMSPA
****************************** Bottom of data ********************************
```

Figure 268. Selecting a Connect Report Set and creating a new one

A panel is then displayed for you to view or modify the description of the Report Set and the reports it contains. Figure 158 on page 288 shows an example of a Connect Report Set.

The list of reports in the Report Set is presented in a tree structure (folder style). The reports are grouped by category.

```
  File  View  SysDefs  Options  Help
-------------------------------------------------------------------------------
EDIT                      Report Set - CEXAMPLE                  Line 1 of 18
Command ===> ____________________________________________ Scroll ===> PAGE

Description . . . IMS PA Report Set

Enter "/" to select action.

RUN          ** Reports **                              Active
     -  ___  Options                                     Yes
             ___  Connect Global                         Yes
     -  ___  Transaction Transit Reports                 No
             ___  Analysis                               Yes
             ___  Log                                    No
             ___  Extract                                No
     -  ___  Transaction Transit Reports (Form-based)    Yes
             ___  List                                   Yes
             ___  Summary                                Yes
             ___  Transaction Index                      No
     -  ___  Resource Usage Reports                      Yes
             ___  Port Usage                             Yes
             ___  Resume Tpipe                           No
             ___  ACK/NAK                                Yes
             ___  Exception Events                       Yes
             ___  Gap Analysis                           No
     -  ___  Trace Reports                               No
             ___  Transit Event Trace                    No
             ** End of Reports **
```

Figure 269. Connect Report Set Edit Panel

The Report Set panels show the list of all available Connect reports in a tree structure. See "Report Set menu tree" on page 123 for a description of the tree structure.

Each report can be activated (**Active=Yes**) or deactivated (**Active=No**). If any changes are made to a report, the dialog will mark the report as active automatically. Each Report Category can be activated or deactivated. Only active reports in active report categories are included in the Report Set at submit time. A Report Set can be submitted for processing only if there is at least one active report in an active report category.

However, you can also use the **RUN** line action to temporarily override the inactive status of a report or report category.

Line actions

The line actions that you can enter on the IMS Connect Report Set panel depend on the type of item that you enter the line action next to.

The available line actions depend on whether they are acting on either:
- The top of the Report Set menu tree (whole of Report Set)
- A Report or Option Category
- The Global Options
- A Report or Extract

** Reports **

The available line actions for `** Reports **` at the top of the menu tree are:

/ Display the menu of line actions.

S Expand all categories that are not already expanded, or collapse all categories if they are all expanded.

A Activate all categories that contain one or more active reports. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.

AA Activate all categories, all reports, all options.

D Deactivate all categories. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.

DD Deactivate all categories, all reports, all options.

RUN Also **R**. Run the report category. Run-time options will display.

Report Categories

The available line actions for a Report Category are:

/ Display the menu of line actions.

S Expand or Collapse the report category.

A Activate the report category (**Active=Yes**). Alternatively, you can type `Y` in the **Active** column. This does not affect the status of the individual reports. If there are no active reports in the category, it cannot be activated. Only the active reports in active report categories will be run when the Report Set is submitted.

AA Activate the report category and all the reports and options within it.

D Deactivate the report category (**Active=No**). Alternatively, you can type `N` in the **Active** column. This does not affect the status of the individual reports. When a report category is deactivated, no reports in that category will be run when the Report Set is submitted.

DD Deactivate the report category and all the reports and options within it.

RUN Also **R**. Run the report category. Run-time options will display.

Options

There is one set of Options: Connect Global Options. The Options can be edited by selecting with line action **S**. They cannot be explicitly activated or deactivated.

Reports

The available line actions for a report are:

/ Display the menu of line actions.

S Select (Edit) the report.

A Activate the report (**Active=Yes**). Alternatively, you can type `Y` in the **Active** column.

D Deactivate the report (**Active=No**). Alternatively, you can type `N` in the **Active** column.

RUN Also **R**. Run the report. Run-time options will display.

RUN command

The RUN command runs the Report Set and prompts you for entry of runtime options, such as System Selection and Report Interval, before generating the JCL.

SUB, JCL, and JCM are special RUN requests that preset the Execution Mode (see Figure 270 on page 572):

- The SUBMIT or SUB command directly submits the Report Set for execution.
- The JCL command builds the JCL to execute the Report Set and allows you to edit the job before you submit it or save it in your JCL library.
- The JCLCMD or JCM command builds the JCL, converts the Report Set to a command stream, and allows you to edit the job before you submit it or save it in your JCL library.

The RUN command does not reset the Execution Mode. For example, if you SUB a Report Set, the Execution Mode is set to 1. If next time you RUN a Report Set, the Execution Mode will default to 1.

RUN is also available as a line action to run individual reports or report categories and override the Active status. When entered as a line action, only Execution Mode 3 is available. **SUB**, **JCL**, and **JCM** can be entered as a line action, however in this case they act the same as the **RUN** line action.

Specifying report options

You can specify IMS Connect report options using dialog panels and fields.

For additional information about the report options and examples of the reports, see "Analyzing IMS Connect reports and extracts" in the *IMS Performance Analyzer for z/OS: Report Reference.*

Saving your changes

If an active report is deactivated, its specified options are retained. To return to the default options for a report, Edit the report in the Report Set, then select **File** > **Reset To Defaults** from the action bar or enter DEFAULTS on the command line. To return to the default value for a single field (excluding flags, selection fields, or fields in a dependent set), just erase the value in the field.

Any changes to a Report Set's options and activated reports are saved *only* by issuing a SAVE, SAVEAS, or EXIT (F3) command from the EDIT Report Set panel.

Note: Exit (**F3**) discards changes if **Automatic Save on Exit** in your IMS PA Profile Options is set to `NO`.

Saving of changes made on a subordinate panel is as follows:

- If **Exit** (**F3**) from the subpanel, then changes are retained pending SAVE, SAVEAS, or EXIT (F3) from the EDIT Report Set panel.
- If **Cancel** (**F12**) from the subpanel, then changes just entered on the subpanel are discarded.

Run Connect Report Set

The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

About this task

One way to do this is shown in Figure 269 on page 569.

At the time of report submission, but before IMS PA generates the JCL, the Run Report Set panel is displayed to prompt you to specify runtime options.

```
  File  SysDefs  Options  Help
──────────────────────────────────────────────────────────────────────
                        Run Report Set CEXAMPLE
Command ===> ____________________________________________________________

Specify run options then press Enter to continue submit.

System Selection:                        ──── Report Interval ──────
 System or Group . . PR01      +              YYYY/MM/DD  HH:MM:SS:TH
                                         From 2013/06/01  00:00:00:00
                                         To   2014/01/01  00:00:00:00

File Selection Options:                  Unresolved Data Set Options:
2  1. Use specified journal files        2  1. Issue error message
   2. Automated file selection              2. Edit unresolved JCL

Execution Mode:                          Enter "/" to select option
3  1. Submit Report Set                  _  Bypass run-time options prompt
   2. Edit JCL before submit
   3. Edit JCL with command input
```

Figure 270. Run Connect Report Set

Specify your desired runtime options. When the specification is complete, press Enter to proceed with JCL generation.

Note that the selected Report Set is already specified for you. Specify the System that you want to report against. Press **Prompt** (**F4**) from the System or Group field to select from a list of available IMS Connect Systems or Groups defined in the IMS Connect Extensions Definitions Data Set.

The fields on the Run Report Set panel are:

System Selection

Enter the name or press **Prompt** (**F4**) to select from a list of available systems or groups.

A group can specify both IMS and Connect systems for combined end-to-end Form-based reporting. Depending on your File Selection Options, IMS PA builds the JCL using the files from System Definitions or the system details from the IMS Connect Extensions Definitions Data Set specified in your profile options (dialog option 0.5 **IMS Connect Extensions Definitions Data Set**).

If files are not explicitly included in the JCL, IMS PA uses Automated File Selection to locate the Connect journal data sets and if requested, the IMS Log data sets, relevant to the specified report interval.

Report Interval

When reporting on an IMS Connect System, the Report Interval is required so that Automated File Selection can locate the data sets that are relevant to that time period. If you select **Use specified journal files**, then the Report Interval is optional.

The Report Interval allows selection of a subset of the input data for passing to the report processors. Records with time stamps on or after the From date/time and before the To date/time are selected for processing. Reducing the time period can significantly reduce processing time for generating the reports.

Date can be either a calendar date or a relative date. Calendar dates must conform to your **Preferred Date Format** in your Profile Options. Relative dates are specified as 0, -1, -2,... to signify a date relative to the current date. 0 represents today, -1 yesterday, -2 two days ago, and so on. If both From and To dates are specified, they must be in the same format.

Time is optional. If From time is not specified, it defaults to the start of the day. If To time is not specified, it defaults to the end of the day. Time is expressed as *hh*:*mm*:*ss*:*th* for hours, minutes, seconds, tenths and hundredths of a second using the colon delimiter.

The date/time range is generated as parameter input in the JCL:

- For IMS Connect Extensions Journal File Selection:

```
//IPIPARM DD *
  FROM=(yyyy/mm/dd,hh:mm:ss:th)
  TO=(yyyy/mm/dd,hh:mm:ss:th)
```

  or

```
//IPIPARM DD *
  FROM=(-nnn,hh:mm:ss:th)
  TO=(-nnn,hh:mm:ss:th)
```

- For IMS Connect Extensions Journal File Selection and Report Set processing:

```
//IPIOPTS DD *
  IMSPACEX START(yyyy/mm/dd,hh:mm:ss:th),
           STOP(yyyy/mm/dd,hh:mm:ss:th)
```

  or

```
//IPIOPTS DD *
  IMSPACEX START(-nnn,hh:mm:ss:th),
           STOP(-nnn,hh:mm:ss:th)
```

File Selection Options

There are two ways to specify the Journal Data Sets for reporting:

1. Select **Use specified journal files** to use the files specified in dialog option 1 **System Definitions** for the system or group. Select this option when you are reporting on orphaned data sets or you do not have an active IMS Connect system. The Report Interval is optional.
2. Select **Automated file selection** to instruct IMS PA to use IMS Connect Extensions Automated File Selection to locate the relevant Journal data sets, and if requested, IMS Log data sets, for the specified System and Report Interval. Select this option when you have specified an IMS Connect Extensions Definitions Data Set (dialog option 0.5 **IMS Connect Extensions Definitions Data Set**).

Execution Mode

Specify whether to execute the Report Set or generated commands, and whether you want to edit the JCL before submit. Editing JCL before submit will enable you to save the JCL in an external data set for automated job scheduling or ad hoc report requests.

Default: Set by the command (RUN, SUB, JCL, JCM) that invoked this panel.

The options are:

1. Submit the Report Set. Same as the SUBMIT or SUB command. This directly submits a batch job to execute the Report Set. The Report Set JCL contains the statements:

```
//IPIRSET  DD DSN=ReportSets.DSN(ReportSetName),DISP=SHR
//IPIOBJL  DD DSN=ObjectLists.DSN,DISP=SHR
//IPIFORM  DD DSN=ReportForms.DSN,DISP=SHR
```

2. Edit JCL before submit. Same as the JCL command. This generates the same JCL as SUBMIT, but allows you to edit it.
3. Edit JCL with command input. Same as the JCLCMD or JCM command. This generates JCL in which the Report Set, and any Object Lists and Distributions it uses, are converted to a stream of commands and displayed to allow you to edit them. For an IMS Connect Report Set, the JCL contains the statements:

```
//IPICMD  DD *
         IMSPACEX     ...,
                      INCL|EXCL(...),...
         IMSPACEX     EXECUTE
```

Note that when you enter RUN at the report-level as a line action or override, option 3 is the only option available to you.

Related concepts:

"Report command format" on page 41
IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

Related reference:

Chapter 25, "IMS Connect batch interface," on page 601
The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for IMS Connect report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

"Report Set JCL" on page 741
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Connect Global Options

The IMS Connect Global Options define general control information that applies to all reports within the Report Set.

To view and edit Connect Global Options for a Report Set:

1. Select the Connect Report Set.
2. Expand the **Options** category using line action S.
3. Select the **Connect Global** category using line action S.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                       CEXAMPLE - Connect Global Options
Command ===> _________________________________________________________________

Specify Connect Global options.

Report Options:
Print Lines per Page . . 60    (1-255)
/  Print "%" sign in Report output

Run-time Options:
_  Activate inflight processing
   Inflight DSN  . . . __________________________________________________
   Outflight DSN . . . __________________________________________________
   _  Print the discarded transactions report

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 Tpipe                  ___    ________   _
 TCP/IP Port Number     ___    ________   _
```

Figure 271. Connect Global Options

The options are:

Print Lines per Page
Default: `60`

Specify the number of print lines per page. The specified value applies to all IMS Connect reports in the Report Set.

Valid values are from 1 to 255.

This option generates the `PAGESIZE(`*nnn*`)` global operand.

Print "%" sign in Report output
Print the percent sign (%) in percentage values in report output. This is the default, and applies only to some form-based reporting output.

If not selected, this option generates the `NOPCTSIGN` global operand.

Activate inflight processing
Default: Not selected; Inflight processing is not activated.

Select with a / to ensure that all transactions are reported with complete details across journal switches.

IMS Connect Extensions cuts event records to its active journal. At journal switch time, some transactions may be in the middle of processing and incomplete. Without inflight processing activated, reporting against the archive journal will result in these incomplete transactions being lost or reported with incomplete details.

Inflight processing requires both an input and output data set, either consecutive generations of a generation data group (GDG), or two explicitly-named data sets:

Inflight DSN
The name of the input data set that contains incomplete transactions from the previous run. The inflight data set is read at

the start of report processing. Incomplete transactions will resume and presumably complete within the current journal.

Outflight DSN
The name of the output data set that is to contain incomplete transactions from the current run. The outflight data set is written at the end of report processing and automatically becomes the inflight data set for the next run.

Optionally, select **Print the discarded transactions report** to produce a report of incomplete transactions in the inflight data set that have no activity in the current journal and are not written to the outflight data set.

Tip: After you commence running the Report Set with inflight processing activated, you should not change the selection of reports. If you wish to run a different set of reports, define them in a new Report Set with a different pair of inflight and outflight data sets.

Selection Criteria
Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Global selection criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from all IMS Connect reports in the Report Set. The fields you can filter on are:
- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- Tpipe
- TCP/IP Port Number

This option generates the `INCL|EXCL(`*`field`*`(`*`values`*`))` global operand.

Related reference:

"Connect Global Options" on page 606
The Connect Global Options define output and general control information for the IMS Connect reports.

Transaction Transit reports

The Connect Transaction Transit reports provide performance statistics to measure the performance of your IMS Connect transactions.

Transaction Transit (response) time is broken down into its components; Input, Processing (by OTMA), Acknowledgement from the client, and Output. They can help identify any bottlenecks in transaction flow, and are used for monitoring system performance, gathering diagnostic information, and tuning IMS.

The Connect Transaction Transit reports are:
- Analysis
- Log
- Extract

Connect Transit Analysis report

The IMS Connect Transit Analysis report provides a summary of IMS Connect transaction performance.

Performance data can be summarized by one or two sort keys including Time of Day, Transaction Code, User ID, Datastore (original and target), Port number, and Connect Client ID.

Performance statistics are provided as averages, and optionally, peak percentiles. For example, you can specify 90 to report the elapsed time within which 90% of transactions completed.

IMS PA generates the report command:

```
IMSPACEX ANALYSIS(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                         CEXAMPLE - Transit Analysis
Command ===> _____________________________________________________________________

Specify report options.

Reports Required:
     Ordering Operands  Time           Report
    Level-1 + Level-2 + Interval  Peak  DDName
 1. TRANCODE  TIME      00:15:00  85    ANAL0001
 2. TIME      CLIENTID  00:30:00  ___   ANAL0002
 3. ________  ________  ________  ___   ANAL0003
 4. ________  ________  ________  ___   ANAL0004
 5. ________  ________  ________  ___   ANAL0005

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 TCP/IP Port Number     ___    ________   _
```

Figure 272. Connect Transit Analysis Report Options

You can specify up to five different reports with the following options:

Ordering Operands

Default: One report sorted by TRANCODE

You can request multiple reports. For each report, specify the name of one or two fields that you want the report ordered by.

Press **Prompt** (**F4**) to select from a list of available fields. The order of the fields defines the sort order of the report; the level-1 ordering operand is the primary sort field.

If you specify TIME as a sort field, then specify the time interval.

This option generates the `BY(`*field1*`)` or `BY(`*field1*`,`*field2*`)` operand.

Time Interval

Default: `00:01:00` (1 minute)

When TIME is an ordering operand, specify the time interval over which you want details summarized.

Specify a value in the range `00:00:01` (1 second) to `24:00:00` (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, `1.35` is reduced to `00:01:30` minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, `10.30.23` is reduced to `08:00:00` hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

1 becomes `00:01:00`
1.1 becomes `00:01:00` (rounded down from `00:01:01`)
1.1.1 becomes `01:00:00` (rounded down from `01:01:01`)

This option generates the `INTERVAL(`*`hh:mm:ss`*`)` operand.

Peak Default: Not specified; peak percentiles are not reported.

Specify a percentage *nnn* between 50 and 100.

The IMS Connect Transit Analysis report provides a statistical estimate of the peak percentile for each elapsed time component that makes up transaction transit time. For example, specify 95 to report an estimate of the transit time within which 95% of the transactions completed processing. Calculations assume a normal distribution.

If Peak is specified, averages and peak percentiles are reported. If Peak is not specified, only averages are reported.

This option generates the `PEAK(`*`nnn`*`)` operand.

Report DDname
Default: `ANAL0001` to `ANAL0005`

Specify the DDname to be used for the report output. You can request more than one report. To separate the output, specify a different DDname for each.

This option generates the `DDNAME(`*`ddname`*`)` operand.

Selection Criteria
Specify Selection Criteria to apply to all (up to five) Analysis reports.

Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the report. The fields you can filter on are:

- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- TCP/IP Port Number

This option generates the `INCL|EXCL(`*`field`*`(`*`values`*`))` report operand.

Related reference:

"ANALYSIS: Transit Analysis report" on page 607
The ANALYSIS operand of the IMSPACEX batch command requests the IMS Connect Transit Analysis report.

Connect Transit Log report

The IMS Connect Transit Log provides performance details about every transaction processed by IMS Connect.

Information from IMS Connect Extensions event records is collected to provide a complete picture of transaction processing. The order of transactions in the report is based on when they end, and not when they start.

IMS PA generates the report command:

```
IMSPACEX LOG(...)
```

```
  File  Options  Help
─────────────────────────────────────────────────────────────────────────────
                         CEXAMPLE - Transit Log
Command ===> _________________________________________________________________

Specify report options.

Report Options:                          Report Output DDname  LOG_____
_  Additional identification

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 TCP/IP Port Number     ___    ________   _
```

Figure 273. Connect Transit Log Report Options

The options are:

Additional identification

Default: Not selected; report one line of details per message.

For each IMS Connect message, the following primary identification details are reported:
- Transaction Code
- Target Datastore
- Port Number

Select with a / to report additional identification details:
- User ID
- Original Datastore
- Client ID

The additional details exceed the page width so appear on a second report line immediately below the primary details.

If selected, this option generates the `ADDIDENT` operand.

If not selected, this option generates the `NOADDIDENT` operand.

Report Output DDname
Default: LOG

Specify the DDname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Selection Criteria
Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the report. The fields you can filter on are:
- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- TCP/IP Port Number

The corresponding Object Lists that can be used are of type TRAN, USERID, IMSID, CLIENT, and PORT. Press **Prompt** (**F4**) to select from a list of available Object Lists. Then select **List** with a/ to denote that you have specified an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

Related reference:

"LOG: Transit Log report" on page 608
The LOG operand of the IMSPACEX batch command requests the IMS Connect Transit Log report.

Connect Transit Extract

The IMS Connect Transit Extract provides performance details about every transaction processed by IMS Connect. You can request a List or Summary Extract, or both. The List Extract provides similar details to the Connect Transit Log report, while the Summary Extract summarizes these details over a specified time interval.

The extract data is suitable for exporting to DB2 for further manipulation and analysis. For a description of the List data, refer to "Connect List extract" on page 768 and for the Summary data, refer to "Connect Summary extract" on page 764. Sample DB2 jobs are supplied in the SIPISAMP library to help you define and load the DB2 tables and run queries:

- For the List Extract:
  - Sample DDL job IPICLDDL
  - Sample Load job IPICLLOD
  - Sample SQL queries IPICQML1 and IPICQML2
- For the Summary Extract:
  - Sample DDL job IPICSDDL
  - Sample Load job IPICSLOD
  - Sample SQL queries IPICQMS1 and IPICQMS2

IMS PA generates the report command:

```
IMSPACEX TRANEXTR(...)
```

```
  File  Options  Help
-------------------------------------------------------------------------------
                        CEXAMPLE - Transit Extract
Command ===> ___________________________________________________________________

Specify extract options.

                                        Extract Recap DDname  TRANEXTR
Extract Options:
 _  List Extract DSN  . . . _____________________________________________
 _  Summary Extract DSN . . _____________________________________________
 _  Extended Format

 Time Interval  . . 00:15:00  (hh:mm:ss)

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 TCP/IP Port Number     ___    ________   _
```

Figure 274. Connect Transit Extract Options

The options are:

Extract Recap DDname
Default: TRANEXTR

Specify the DDname to be used for the Extract Recap report output.

This option generates the DDNAME(*ddname*) operand.

Extract DSNs:
Defaults: Not specified; DSN is required if the extract is requested.

You can request a List Extract, a Summary Extract, or both:

- To produce the List Extract, select **List Extract DSN** with a / and specify the name of the extract data set.
- To produce the Summary Extract, select **Summary Extract DSN** with a / and specify the name of the extract data set. Also specify the time interval to use for summarizing the data.

If the data set does not exist, IMS PA will create it at the time the extract is run using the corresponding allocation details specified in Reporting Allocation Settings in your Profile Options.

If the data set exists, the new extract records will be appended to the end (DISP=MOD). To overwrite the contents of the data set, edit the JCL before submission and specify DISP=OLD.

You can specify the extract data set as a generation of a generation data group (GDG) and thereby avoid the need to update the specification between runs.

Extended Format
Default: Not selected; no additional fields will be processed.

Select with a / to have additional fields appended to the record of the requested extracts. For example, an additional field is the IMS Connect Extensions exit name (form field EXITNAME). Specify a new data set for the

initial extract as the DCB and record layout are incompatible with the existing record format. If the resultant data is being used as input to DB2, or other load function, then the load process must be modified to account for the additional data.

Contact your local IBM support office for details of maintenance associated with new fields and updated record formats.

This option generates the `EXTENDED` operand.

Time Interval

Default: `00:15:00` (15 minutes)

If requesting a Summary Extract, specify the time interval by which you want the data summarized. It is not applicable to the List Extract.

Specify a value in the range `00:00:01` (1 second) to `24:00:00` (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, `1.35` is reduced to `00:01:30` minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, `10.30.23` is reduced to `08:00:00` hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

1 becomes `00:01:00`
1.1 becomes `00:01:00` (rounded down from `00:01:01`)
1.1.1 becomes `01:00:00` (rounded down from `01:01:01`)

This option generates the `INTERVAL(`*`hh`*`:`*`mm`*`:`*`ss`*`)` operand.

Selection Criteria

Selection Criteria enable you to filter the IMS Connect data so that your extract data set contains only the information that you are interested in.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the extract. The fields you can filter on are:

- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- TCP/IP Port Number

The corresponding Object Lists that can be used are of type `TRAN`, `USERID`, `IMSID`, `CLIENT`, and `PORT`. Press **Prompt** (**F4**) to select from a list of available Object Lists. Then select **List** with a `/` to denote that you have specified an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

This option generates the `INCL|EXCL(`*`field`*`(`*`values`*`))` report operand.

Related reference:

“TRANEXTR: Transit Extract” on page 609
The TRANEXTR operand of the IMSPACEX batch command requests the IMS Connect Transit Extract. This creates extract data sets of performance details about every transaction processed by IMS Connect.

Transaction Transit reports (Form-based)

The Transaction Transit reports and extracts use the IMS Connect Extensions journal as input. In addition to producing Connect Transaction Transit reports, the Report Set can be used to request combined Connect and IMS reports by merging IMS Connect Extensions journal and IMS log file data. This merged data provides an end-to-end picture of the Connect transaction life cycle.

Transaction Transit List report and extract

The Form-based Transit List in the CEX Report Set is similar to the Form-based Transit List in the **Log** Report Set.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          CEXAMPLE - Transit List                   More: < >
Command ===> _________________________________________________________________

Specify required view:                  ────── Report Interval ──────
1  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ___________
   3. Transit options                   To   __________  ___________

Reports Required:
                       Output                Digit    Match    Report
    Type     Form +    Messages Precision  Grouping Required Width
 1. REPORT   ________  NO           3       NO       NO        126 <
 2. _______  ________  NO           3       NO       NO
 3. _______  ________  NO           3       NO       NO
 4. _______  ________  NO           3       NO       NO
 5. _______  ________  NO           3       NO       NO

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 LTERM                  ___    ________   _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 TCP/IP Port Number     ___    ________   _
```

Figure 275. CEX Transaction Transit List (View 1 of 3): Report options

Like the Form-based Transit List in the LOG Report Set, the Form-based Transit List in the CEX Report Set has three views. The extract and transit option views are the same for both LOG and CEX. For a description of these, see “Transaction Transit List report and extract” on page 320.

Most of the options are the same for both LOG and CEX. The **Transaction Mix** LOG report option is not available for CEX reports. Other report option differences are:

Match Required
Default: NO

Only applicable in combined Connect/IMS Form-based reporting:

YES Report only Connect and IMS transactions for which full end-to-end data is available.

NO Report all Connect transactions and if any, their associated IMS transaction activity.

Note: The specified completion levels (COMPLVLC and COMPLVL) determine which transactions are available for selection.

Selection Criteria

Default: Not specified.

Records can be included in or excluded from the report based on their Transaction Code, LTERM, User ID, Datastore (IMS ID), Client ID, and TCP/IP Port Number values. This enables you to report only the information of interest. You can specify a single value, a masking pattern (except Port Number), or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

The extract options are:

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          CEXAMPLE - Transit List                  More: < >
Command ===> ____________________________________________________________

Specify required view:                  ──── Report Interval ────
2  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ____________
   3. Transit options                   To   __________  ____________

Extract Data Sets:

    Type     Form +    Extract Data Set Name                          Disp
 1. REPORT   ________  ____________________________________________  ___
 2. EXTRACT  ________  ____________________________________________  ___
 3. _______  ________  ____________________________________________  ___
 4. _______  ________  ____________________________________________  ___
 5. _______  ________  ____________________________________________  ___

Extract Options:
/  Include Delimiter                   Delimiter . . ,  (blank is valid)
/  Include Field Labels
_  Numeric Fields in Float Format
```

Figure 276. CEX Transaction Transit List (View 2 of 3): Extract options

The transit options are:

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          CEXAMPLE - Transit List                   More: < >
Command ===> _________________________________________________________________

Specify required view:                  ────── Report Interval ───────
3  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ___________
   3. Transit options                   To   __________  ___________

Transit Options:
                               -CEX Level-  -- IMS Levels --
    Type     Form +    DDname   Completion  Start Completion
 1. REPORT   ________  LIST0001     2         2       3
 2. EXTRACT  ________  LIST0002     2         2       3
 3. _______  ________  LIST0003     2         2       3
 4. _______  ________  LIST0004     2         2       3
 5. _______  ________  LIST0005     2         2       3
```

Figure 277. CEX Transaction Transit List (View 3 of 3): Transit options

The differences for transit options are:

CEX Completion Level

Default: 2

Enter a value between 0 and 4 to specify the minimum Connect transaction completion level for reporting.

IMS PA assigns a completion level to every transaction. Form-based reporting can specify a minimum completion level, instructing IMS PA to report only those transactions that have reached this level of completion.

The Connect transaction completion levels are:

0 IMS Connect non-transactional message initialized. Use to analyze all activity.

1 IMS Connect transactional message initialized. Use to analyze messages rejected by the message exit.

2 IMS Connect Message Sent to OTMA for processing.

3 IMS Connect Message Received from OTMA. This level may also indicate an OTMA Timeout/Error.

4 Transaction has completed Connect processing.

Note: For combined reporting, you have completion levels for both Connect and IMS transactions to consider.

Related concepts:

"LIST Report Form" on page 248
The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.

Related reference:

"LIST: Transaction Transit List report and extract (Form-based)" on page 611
The LIST operand of the IMSPACEX batch command requests the Transaction Transit List report or extract for IMS or Connect fields.

Transaction Transit Summary report and extract

The Form-based Transit Summary report is similar to the Form-based Transit List report.

```
                          IMSCONN - Transit Summary                  More: < >
Command ===> ____________________________________________________________________

Specify required view:                  ------ Report Interval ------
1  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From ___________  ___________
   3. Transit options                   To   ___________  ___________

Reports Required:
                        Time     Totals Precision  Digit    Match    Report
    Type     Form +     Interval Level  Time Count Grouping Required Width
 1. REPORT   ________   00:01:00  0      3    0     NO       NO        125 <
 2. _______  ________   00:01:00  0      3    0     NO       NO
 3. _______  ________   00:01:00  0      3    0     NO       NO
 4. _______  ________   00:01:00  0      3    0     NO       NO
 5. _______  ________   00:01:00  0      3    0     NO       NO

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 LTERM                  ___    ________   _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 TCP/IP Port Number     ___    ________   _
```

Figure 278. CEX Transaction Transit Summary (View 1 of 3): Report options

Like the Form-based List, the Form-based Summary has three views. The extract and transit option views are the same for the List and the Summary. Most of the report options are the same for the List and Summary. For a description of these, see "Transaction Transit List report and extract" on page 583.

The report options that are different for the Summary report are:

Form Default: Not specified.

The name of a SUMMARY Report Form used to tailor the format and content of the extract. If a Form is not specified, an internally defined default Form will be used.

Time Interval

Default: `00:01:00`

The time interval applies when you want to summarize activity over time. It is used when you specify a SUMMARY Report Form which has one or both sort fields `STARTIMS` or `STARTCON` included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each.

Specify a value in the range `00:00:01` (1 second) to `24:00:00` (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, `1.35` is reduced to `00:01:30` minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns

to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

1 becomes 00:01:00
1.1 becomes 00:01:00 (rounded down from 00:01:01)
1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

Totals Level

Default: 0

Specify the grand total and subtotal levels required for reporting as follows:

Blank No totals.

0 Grand totals only, no subtotals.

1–7 Grand total and subtotals to the corresponding key level.

Precision

Time Default: 3

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:

- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

Note: Rounding occurs for elapsed and CPU time values.

Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The > symbol indicates that the report precision is less than the Report Form precision. The > symbol indicates that the report precision is greater than the Report Form precision.

Count Default: 0

Specifies the precision of count fields, applicable only when reported as average, from 0 to 2 decimal places.

Extract Data Set Name

Default: Not specified.

The name of the data set where the extract records are written. If IMS PA is to create the data set at run time, the default allocation attributes specified for **Summary (CPU Usage, Database Update Activity and Connect) Extracts** in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use DISP=OLD or DISP=MOD according to your request to overwrite or append to the existing data set. Alternatively, you can use a generation data group (GDG) to create a new data set each time the extract is run. When generating the JCL, IMS PA assigns a default DDname of SUMX*nnnn* where *nnnn* is a sequential number 0001–9999 to ensure DDnames are unique.

When specifying the data set name, standard TSO conventions apply. For example, if the TSO option `PROFILE PREFIX` is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

DDname

Default: IMS PA assigns a default DDname of `SUMM`*`nnnn`* where *`nnnn`* is a sequential number `0001`–`9999` to ensure each report has a unique DDname.

The DDname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The DDname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same DDname without consequence, however a mix of reports using the same DDname may interleave the print lines.

In the event of the output being an extract file, the DDname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract file name and record count.

Related concepts:

"SUMMARY Report Form" on page 251
The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

Related reference:

"SUMMARY: Transaction Transit Summary report and extract (Form-based)" on page 613
The SUMMARY operand of the IMSPACEX batch command requests a Transaction Transit Summary Report or Extract for IMS and Connect fields.

IMS Connect Transaction Index

The IMS Connect Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS Connect Extensions journal about that transaction.

Creating an IMS Connect Transaction Index

The IMS Connect Transaction Index is requested from an IMS Performance Analyzer CEX report set and associated INDEX batch command.

Procedure

1. On the IMS PA primary option menu, select option 3 **Report Sets**.
2. Select or create a CEX report set.
3. In the **Transaction Transit Reports (Form-based)** category, select **Transaction Index**.

```
  File  View  SysDefs  Options  Help
-------------------------------------------------------------------------------
EDIT                      Report Set - SAMPCEX                    Line 1 of 8
Command ===> ____________________________________________ Scroll ===> PAGE

Description . . . Sample CEX Report Set

Enter "/" to select action.

___             ** Reports **                              Active
     +  ___     Options                                      No
     +  ___     Transaction Transit Reports                  No
     -  ___     Transaction Transit Reports (Form-based)     No
                ___   List                                   No
                ___   Summary                                No
                S__   Transaction Index                      No
     +  ___     Resource Usage Reports                       No
     +  ___     Trace Reports                                No
                ** End of Reports **
```

Figure 279. IMS PA CEX Report Set: Select Transaction Index

4. Specify the IMS Connect Transaction Index data set name and disposition.

```
  File  Options  Help
-------------------------------------------------------------------------------
                        SAMPCEX - Transaction Index
Command ===> ____________________________________________________________

Specify the Transaction Index data set name and disposition.

    Name: 'IPI000.QADATA.I2CEXIDX'                    Disp: OLD
```

Figure 280. IMS PA: Specify IMS Connect Transaction Index data set name

5. Enter RUN to run the report set, including the IMS Connect Transaction Index request. The generated command is `IMSPACEX INDEX`.
6. Specify report set run-time options, and then press Enter to submit the job.

Related reference:

"INDEX: IMS Connect Transaction Index" on page 618
The INDEX operand of the IMSPACEX batch command requests the IMS Connect Transaction Index.

Using the index with IMS Problem Investigator to diagnose transaction problems

After creating an IMS Connect Transaction Index with IMS Performance Analyzer, you can use it in IMS Problem Investigator to diagnose problem transactions.

The IMS Connect Transaction Index can be analyzed on its own, or in conjunction with the IMS Connect Extensions journals and IMS log files used to create it. The index is a useful diagnostic mechanism that provides a summary insight into the dynamics of the transaction and provides a shortcut to the cause of the problem.

Processing the IMS Connect Transaction Index:

Select the IMS Connect Transaction Index together with the IMS Connect Extensions journals used to create the index. The files are merged and displayed as if they are a single data source.

In the following example, a CA20 filter is specified to display just the index records, hiding all other records from display until they are required.

```
  File  Menu  Edit  Help
──────────────────────────────────────────────────────────────────────────────
                            Process Log Files         Row 33 of 38 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

Select a Log File to browse.                IMS Release 131 +     Zone _____

/        Log File                                          Rel + Filter + Zone
         *CEX INDEX
________ ________________________________________________ ___   ________ _____
ss       'IPI000.QADATA.DGNCEX01.ICON220.JRNL010'         ___   CA20     _____
________ 'IPI000.QADATA.DGNCEX01.ICON220.JRNL011'         ___   ________ _____
________ 'IPI000.QADATA.DGNCEX01.ICON220.JRNL012'         ___   ________ _____
________ 'IPI000.QADATA.DGNCEX01.ICON220.JRNL013'         ___   ________ _____
ss       'IPI000.QADATA.I2CEXIDX'                         ___   ________ _____
****************************** Bottom of data ********************************
```

Figure 281. IMS Problem Investigator: Merge the IMS Connect Transaction Index and original journal files

The following browse panel is the list of all transactions contained in the index, matching the initial filter setting of CA20.

```
  File  Menu  Edit  Mode  Navigate  Filter  Time  Labels  Options  Help
------------------------------------------------------------------------------
BROWSE    IPI000.QADATA.DGNCEX01.ICON220.JRNL010     Record 00000055 More: < >
Command ===> F PART_____________________________________________ Scroll ===> CSR_
   Forwards / Backwards . . _______________    Time of Day . . 18.00.00.000000
   Code Description               Date 2011-09-08 Thursday   Time (Local)
/  ---- ------------------------------------------------------ ---------------
__ CA20 Connect Transaction TranCode=CEXTCONV                  09.26.53.841714
__ CA20 Connect Transaction TranCode=TIME                      09.26.53.973130
__ CA20 Connect Transaction TranCode=WAIT(5)                   09.26.54.131862
__ CA20 Connect Transaction TranCode=WAIT(20)                  09.26.54.165552
__ CA20 Connect Transaction TranCode=SWITCH                    09.26.54.196957
__ CA20 Connect Transaction TranCode=SWITCH                    09.26.54.245134
__ CA20 Connect Transaction TranCode=SWITCH                    09.26.54.296699
__ CA20 Connect Transaction TranCode=SWITCH                    09.26.54.357403
__ CA20 Connect Transaction TranCode=TIME                      09.26.54.416015
__ CA20 Connect Transaction TranCode=ABEND(40                  09.26.54.442242
__ CA20 Connect Transaction TranCode=CEXSCONV                  09.27.21.150298
__ CA20 Connect Transaction TranCode=TIME                      09.27.21.184749
__ CA20 Connect Transaction TranCode=WAIT(5)                   09.27.21.246913
__ CA20 Connect Transaction TranCode=SWITCH                    09.27.21.280837
__ CA20 Connect Transaction TranCode=SWITCH                    09.27.21.335215
```

Figure 282. IMS Problem Investigator: Filtered list of IMS Connect Transaction Index records

Locate a record of interest. In this example, we have entered a FIND command to locate the PART transaction.

Tracking the problem transaction:

When you have located the problem transaction, you can use tracking to view all event records associated with the transaction.

Use the TX line action against the relevant IMS Connect Transaction Index record to start tracking that transaction.

```
  File  Menu  Edit  Mode  Navigate  Filter  Time  Labels  Options  Help
--------------------------------------------------------------------------------
BROWSE    IPI000.QADATA.DGNCEX01.ICON220.JRNL010                 String found
Command ===> ____________________________________________________ Scroll ===> CSR_
   Forwards / Backwards . . _________________   Time of Day . . 18.00.00.000000
   Code Description               Date 2018-09-08 Thursday   Time (Local)
/  ---- ------------------------------------------------------ --------------
tx CA20 Connect Transaction TranCode=PART                      09.30.08.996476
__ CA20 Connect Transaction TranCode=PART                      09.30.09.279825
__ CA20 Connect Transaction TranCode=PART                      09.30.09.368052
__ CA20 Connect Transaction TranCode=PART                      09.30.09.464258
__ CA20 Connect Transaction TranCode=PART                      09.30.09.554185
__ CA20 Connect Transaction TranCode=DSPALLI                   09.30.09.930922
__ CA20 Connect Transaction TranCode=DSPALLI                   09.30.10.089499
__ CA20 Connect Transaction TranCode=DSPALLI                   09.30.10.200529
__ CA20 Connect Transaction TranCode=ADDINV                    09.30.11.979080
__ CA20 Connect Transaction TranCode=ADDINV                    09.30.12.125252
__ CA20 Connect Transaction TranCode=ADDINV                    09.30.12.477113
__ CA20 Connect Transaction TranCode=ADDINV                    09.30.12.570718
__ CA20 Connect Transaction TranCode=ADDINV                    09.30.12.651367
```

Figure 283. IMS Problem Investigator: Start transaction tracking against the index

All Connect event records associated with that transaction are displayed.

```
  File  Menu  Edit  Mode  Navigate  Filter  Time  Labels  Options  Help
--------------------------------------------------------------------------------
BROWSE    IPI000.QADATA.DGNCEX01.ICON220.JRNL010              Tracking active
Command ===> ____________________________________________________ Scroll ===> CSR_
   Forwards / Backwards . . _________________   Time of Day . . 18.00.00.000000
   Code Description               Date 2018-09-08 Thursday   Time (Local)
/  ---- ------------------------------------------------------ --------------
__ CA20 Connect Transaction TranCode=PART                      09.30.08.996476
__ A049 READ Socket                                            09.30.08.996549
__ A0A4 Event Collection IRM Trace                             09.30.08.996581
__ A03D Message Exit called for READ                           09.30.08.996584
__ A0A3 Event Collection OTMA Trace                            09.30.08.996626
__ A03E Message Exit returned from READ TranCode=PART          09.30.08.996632
__ A0A3 Event Collection OTMA Trace                            09.30.08.996709
__ A041 Message sent to OTMA                                   09.30.08.996758
__ A0A3 Event Collection OTMA Trace                            09.30.09.163681
__ A042 Message received from OTMA                             09.30.09.163703
__ A0A3 Event Collection OTMA Trace                            09.30.09.163967
__ A0A3 Event Collection OTMA Trace                            09.30.09.163975
__ A0A3 Event Collection OTMA Trace                            09.30.09.163979
__ A03D Message Exit called for XMIT                           09.30.09.163982
__ A0A6 Event Recording EXIT Output Message Trace              09.30.09.164019
__ A03E Message Exit returned from XMIT                        09.30.09.164023
__ A04A WRITE Socket                                           09.30.09.164182
__ A049 READ Socket                                            09.30.09.166044
__ A049 READ Socket                                            09.30.09.166085
__ A0A4 Event Collection IRM Trace                             09.30.09.166107
__ A03D Message Exit called for READ                           09.30.09.166110
__ A0A3 Event Collection OTMA Trace                            09.30.09.166139
__ A03E Message Exit returned from READ TranCode=PART          09.30.09.166143
__ A0A3 Event Collection OTMA Trace                            09.30.09.166275
__ A041 Message sent to OTMA Resp=ACK                          09.30.09.166282
__ A045 OTMA Time-out                                          09.30.09.416882
__ A0A3 Event Collection OTMA Trace                            09.30.09.416925
```

Figure 284. IMS Problem Investigator: Track against the index to see the Connect events for the transaction

Problem detection can be done with the IMS Connect Transaction Index on its own or merged with the associated IMS Connect Extensions journals and IMS log files.

Resource Usage reports

The Connect Resource Usage reports contain detailed and summary information on the use and availability of various IMS Connect resources including TCP/IP Ports and Tpipes.

The IMS Connect Resource Usage reports are:
- Port Usage
- Resume Tpipe
- ACK/NAK
- Exception Events
- Gap Analysis

Connect Port Usage report

The IMS Connect Port Usage Report provides a summary of the TCP/IP ports used by the IMS Connect system.

For each Port, summary statistics are provided for port depth, message processed count, and ACCEPT, READ, and WRITE Socket counts.

The report can optionally be summarized by time interval.

IMS Performance Analyzer generates the report command:

```
IMSPACEX PORT(...)
```

```
 File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                            CEXAMPLE - Port Usage
Command ===> ____________________________________________________________

Specify report options.

Interval Options:                       Report Output DDname  PORT
 _  Time Interval 00:01:00  (hh:mm:ss)

Processing Options:
 Peak Percentile  90   (50-100%)

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 TCP/IP Port Number     ___    ________   _
```

Figure 285. Connect Port Usage Report Options

The options are:

Report DDname
Default: PORT

Specify the DDname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Time Interval

Default: `00:01:00` (1 minute) but not selected; report is not summarized by time.

To summarize the information by time interval, select with a / and specify the time interval.

Specify a value in the range `00:00:01` (1 second) to `24:00:00` (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, `1.35` is reduced to `00:01:30` minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, `10.30.23` is reduced to `08:00:00` hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

1 becomes `00:01:00`
1.1 becomes `00:01:00` (rounded down from `00:01:01`)
1.1.1 becomes `01:00:00` (rounded down from `01:01:01`)

This option generates the `INTERVAL(`*hh*`:`*mm*`:`*ss*`)` operand.

Peak Default: `90`

Specify a percentage *nnn* between `50` and `100`.

The IMS Connect Port Usage report provides a statistical estimate of the peak percentile for Input READ time and ACK/NAK READ time. For example, specify `95` to report an estimate of the time within which 95% of the READs completed. Calculations assume a normal distribution.

This option generates the `PEAK(`*nnn*`)` operand.

Selection Criteria

Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in.

Specify TCP/IP Port Number values to be included in or excluded from the report. This report-level filter applies to the subset of records after the global filter (if specified) has been applied.

Valid TCP/IP Port Numbers are in the range 1 to 65535. Masking (*) is not supported.

An Object List of type PORT can be used to specify a list or range of values. Press **Prompt** (**F4**) to select from a list of available Object Lists. Then select **List** with a / to denote that you have specified an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

This option generates the `INCL|EXCL(PORT(`*values*`))` report operand.

Related reference:

"PORT: Port Usage report" on page 618
The PORT operand of the IMSPACEX batch command requests an IMS Connect Port Usage report.

Connect Resume Tpipe report

The IMS Connect Resume Tpipe report provides a summary of Resume Tpipe command activity.

The standard version of the report provides command statistics, including command count, and a breakdown by command type; Auto (with timeout), No Auto and Single. Command statistics include count of commands issued, IMS messages received, Negative responses (Tpipe queue empty), NAK and timeout interval.

The extended version of the report supports all of the different resume tpipe types and options.

The report can optionally be summarized by time interval.

IMS Performance Analyzer generates the report command:
`IMSPACEX TPIPE(...)`

```
                          CEXAMPLE - Resume Tpipe
Command ===> ____________________________________________________________

Specify report options.

Interval Options:                       Report Output DDname  TPIPE___
 _  Time Interval 00:01:00  (hh:mm:ss)

Report Options:
 /  Extended format

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Tpipe                  ___    ________   _
```

Figure 286. Connect Resume Tpipe Report Options

The options are:

Report DDname
Default: `TPIPE`

Specify the DDname to be used for the report output.

This option generates the `DDNAME(`*`ddname`*`)` operand.

Time Interval
Default: `00:01:00` (1 minute) but not selected; report is not summarized by time.

To summarize the information by time interval, select with a / and specify the time interval. The standard version report supports reporting by time interval; the extended version of the report does not.

Specify a value in the range `00:00:01` (1 second) to `24:00:00` (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, `1.35` is reduced to `00:01:30` minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, `10.30.23` is reduced to `08:00:00` hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:
1 becomes `00:01:00`
1.1 becomes `00:01:00` (rounded down from `00:01:01`)

1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the INTERVAL(*hh*:*mm*:*ss*) operand.

Extended format

Generates the extended format of the report, rather than the standard version. The extended version of the report supports all of the different resume tpipe types and options, and the IMS V14 parallel resume tpipe option. However, the extended format report does not support reporting by time interval.

Selection Criteria

Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in.

Specify Tpipe values to be included in or excluded from the report. The Tpipe values are 1–8 alphanumeric character names and masking (*) is supported.

An Object List of type TPIPE can be used to specify a list or range of values. Press **Prompt** (**F4**) to select from a list of available Object Lists. Then select **List** with a / to denote that you have specified an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

This option generates the INCL|EXCL(TPIPE(*values*)) report operand.

Related reference:

"TPIPE: Resume Tpipe report" on page 619
The TPIPE operand of the IMSPACEX batch command requests the IMS Connect Resume Tpipe report.

Connect ACK/NAK report

The IMS Connect ACK/NAK Report provides a summary of acknowledgement activity for transactions that use Sync Level=CONFIRM.

Positive acknowledgement (ACK) and negative acknowledgement (NAK) statistics are reported for each transaction code. NAK is further broken down as negative acknowledgement from either OTMA (NAK sense code) or from the Client.

The report can optionally be summarized by time interval.

IMS Performance Analyzer generates the report command:

```
IMSPACEX ACKN(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                              CEXAMPLE - ACK/NAK
Command ===> _____________________________________________________________

Specify report options.

Interval Options:                        Report Output DDname  ACKNAK__
 _  Time Interval 00:01:00  (hh:mm:ss)

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 TCP/IP Port Number     ___    ________   _
```

Figure 287. Connect ACK/NAK Report Options

The options are:

Report Output DDname

Default: ACKNAK

Specify the DDname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Time Interval

Default: 00:01:00 (1 minute) but not selected; report is not summarized by time.

To summarize the information by time interval, select with a / and specify the time interval.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval records for each day of data. Minutes take precedence for an abbreviated entry. For example:

1 becomes 00:01:00

1.1 becomes 00:01:00 (rounded down from 00:01:01)

1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the INTERVAL(*hh*:*mm*:*ss*) operand.

Selection Criteria

Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the report. The fields you can filter on are:

- Transaction Code
- User ID

- Datastore (IMS ID)
- Client ID
- TCP/IP Port Number

The corresponding Object Lists that can be used are of type TRAN, USERID, IMSID, CLIENT, and PORT. Press **Prompt** (**F4**) to select from a list of available Object Lists. Then select **List** with a / to denote that you have specified an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

Related reference:

"ACKN: ACK/NAK report" on page 620
The ACKN operand of the IMSPACEX batch command requests the IMS Connect ACK/NAK report.

Connect Exception Events report

The IMS Connect Exception Events Report provides details about events that cause transactions to fail or that signal critical resources are no longer available.

The List report provides a list (in chronological order) of all exception events. The Summary report provides a recap of each exception event encountered and a count of the number of times it occurred.

IMS Performance Analyzer generates the report command:

```
IMSPACEX EXCEPT(...)
```

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          CEXAMPLE - Exception Events
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                      Report Output DDname  EXCEPT
   List
/  Summary
```

Figure 288. Connect Exception Events Report Options

The options are:

Report DDname

Default: EXCEPT

Specify the DDname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Reports Required

Default: Summary

Select with a / to request one or both of the reports that analyze IMS Connect exceptions:

List Provides a list (in chronological order) of all exception events.

This option generates the LIST operand.

Summary
Provides a recap of each exception event encountered and a count of the number of times it occurred. This is the default report.

This option generates the SUMMARY operand.

There are two types of Connect exceptions. The first type is an event that causes a transaction to fail, for example a non-zero return code from a READ EXIT or a NAK response. The second type is when a critical IMS Connect resource becomes unavailable, for example Datastore unavailable or Tpipe stopped.

All exception events are reported; there is no filtering capability via Selection Criteria.

Related reference:

"EXCEPTION: Exception Events report" on page 620
The EXCEPTION operand of the IMSPACEX batch command requests the IMS Connect Exception Events report.

Connect Gap Analysis report

The IMS Connect Gap Analysis report looks for periods of time where journal records are not being cut, potentially highlighting an external system event that may have caused IMS Connect to slow down.

IMS Performance Analyzer generates the report command:

```
IMSPACEX GAP(...)
```

```
 File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          CEXAMPLE - Gap Analysis
Command ===> ____________________________________________________________

Specify report options.                ──── Report Interval ─────
                                            YYYY/MM/DD  HH:MM:SS:TH
Report Output DDname  GAPS             From __________  ___________
                                       To   __________  ___________
Processing Options:
 Gap Threshold . . . 5.000000  seconds (s.thmiju)
```

Figure 289. Connect Gap Analysis Report Options

The options are:

Report Output DDname
Default: GAPS

Specify the DDname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Report Interval
Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and to the **To** Date/Time are included in the report.

You can specify either:

- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2018/06/25 7:00 to 2018/06/25 16:30). The **From** Date/Time must be before the **To** Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the **From** Time greater than the **To** Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

Gap Threshold

Default: `5.000000` seconds

Specify a threshold interval in the range `0.000001` to `9.999999` seconds. This defines the maximum elapsed time tolerated between log records. Every gap longer than the threshold is reported.

Related reference:

"GAP: IMS Connect Gap Analysis report" on page 621
The GAP operand of the IMSPACEX batch command requests the IMS Connect Gap Analysis report.

Trace reports

The Connect Trace reports provide detailed analyses of individual IMS Connect event records.

Trace reports are typically used to investigate point in time performance problems because they provide all available information. To focus on the desired problem area or to minimize the size of the report, specify date/time range and/or Selection Criteria.

Connect Transit Event Trace report

The IMS Connect Trace provides a list of transactions, each with detailed information about every event in the life of that transaction.

At a glance, you can see when a transaction starts, followed by all the events associated with the transaction in the order they occurred.

IMS PA generates the report command:

```
IMSPACEX TRACE(...)
```

```
                        CEX - Transit Event Trace
Command ===> ____________________________________________________________

Specify report options.

                                       Report Output DDname  TRACE___

Selection Criteria:
    Object Type       Inc/Exc  Object +  List     Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 Datastore (IMS ID)     ___    ________   _
 Client ID              ___    ________   _
 TCP/IP Port Number     ___    ________   _
```

Figure 290. Connect Transit Event Trace Report Options

The options are:

Report DDname
Default: TRACE

Specify the ddname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Selection Criteria
Selection Criteria enable you to filter the IMS Connect data so that your report contains only the information that you are interested in.

Global Selection Criteria provide a filter for all reports in the Report Set. Selection Criteria specified for an individual report override the global specification.

Specify field values to be included in or excluded from the report. The fields you can filter on are:
- Transaction Code
- User ID
- Datastore (IMS ID)
- Client ID
- TCP/IP Port Number

The corresponding Object Lists that can be used are of type TRAN, USERID, IMSID, CLIENT, and PORT. Press **Prompt** (**F4**) to select from a list of available Object Lists. Then select **List** with a / to denote that you have specified an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

Related reference:

"TRACE: Transit Event Trace report" on page 622
The TRACE operand of the IMSPACEX batch command requests the IMS Connect Transit Event Trace report.

Chapter 25. IMS Connect batch interface

The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for IMS Connect report requests are described here. Sample jobs are supplied in the SIPISAMP Library.

Related tasks:

"Run Connect Report Set" on page 571
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

IMS Connect Report Set JCL

The JCL built by IMS PA for the batch execution of an IMS Connect Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPICEXJC.

IMS PA builds the JCL to execute the program IPIMAIN using the following options specified using the dialog:

JOB **Job Statement Information** in IMS PA Settings.

IPI EXEC PGM=IPIMAIN,PARM='*parameter list***'**
IMS PA main program with parameters:

UPPER Print reports in upper case if **Reports in Upper Case** is YES in IMS PA Settings.

STEPLIB DD
IMS PA Load Library In IMS PA Settings.

IPICXOUT DD
This is the Transaction Index data set name specified on the Transaction Index panel. To create a Transaction Index, you must specify its data set name.

CXRECAP DD
A statement specifying the output destination where IMS PA will state the number of records written to the Transaction Index data set file.

CEXIN DD
Connect Journal Data Set Selected data set.

SYSPRINT DD
IPIDBRC utility message output file.

IPIOPTS DD *
Report Interval This is the Global Report Interval.

It is the report period specified on the Run Report Set panel at run time. To display the runtime options, you can issue the RUN command for a Report, Report Category, or Report Set.

IPICTRLS DD
Transit List Extract Data Set From the Connect Transit Extract panel.

If the output data sets do not exist, IMS PA uses the **Transit Total Traffic** allocation details in Reporting Allocation Settings. IMS PA may set or adjust the DCB attributes at Extract run time.

IPICTRSU DD

Transit Summary Extract Data Set From the Connect Transit Extract panel.

If the output data set does not exist, IMS PA uses the **Summary Extracts** allocation details in Reporting Allocation Settings.

IPIRSET DD

For *DSN*(*member*) where *DSN* is the **Report Sets Data Set** in your IMS PA Profile and *member* is the name of the **Report Set** being run.

IPIOBJL DD

Object Lists Data Set in your IMS PA Profile.

IPIFORM DD

Report Forms Data Set in your IMS PA Profile.

Sample JCL: IMS Connect Report Set

```
//CEXUSER1 JOB (ACCOUNT),'NAME'
//*
//IPI      EXEC PGM=IPIMAIN
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Input data sets
//CEXIN    DD  DISP=SHR,
//             DSN=IMS.Connect.Extensions.Journal.Data.Set
//*  Sysout data sets
//IPIRPT   DD  SYSOUT=*
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  Report time range
//IPIOPTS  DD  *
  IMSPACEX START(2018/04/19,14:45:08.55),STOP(2018/04/19,15:03:38.55)
//*  IMS Connect List extract file
//IPICTRLS DD  DISP=SHR,DSN=IPI.CEXLIST.EXTRCT
//*  IMS Connect Summary extract file
//IPICTRSU DD  DISP=SHR,DSN=IPI.CEXSUMM.EXTRCT
//*  Report Set member
//IPIRSET  DD  DSN=PREFIX.IMSPA.RSET(CEX01),DISP=SHR
//*  Object Lists data set
//IPIOBJL  DD  DSN=PREFIX.IMSPA.OBJL,DISP=SHR
//*  Report Forms data set
//IPIFORM  DD  DSN=PREFIX.IMSPA.FORM,DISP=SHR
```

Figure 291. JCL: IMS Connect Report Set

Related reference:

"Report Set JCL" on page 741
The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

Connect JCL with command input

To generate JCL that contains commands in-stream, rather than referring to data sets, enter the dialog command JCLCMD, or its abbreviation, JCM; or, equivalently, enter RUN, and then specify the execution mode **Edit JCL with command input**.

By contrast, to generate JCL that builds commands at runtime from data sets, rather than containing commands in-stream, enter the dialog command JCL (or a RUN command that does not specify **Edit JCL with command input**). For details, see "IMS Connect Report Set JCL" on page 601.

The JCL generated by the JCLCMD command differs in the following ways from the JCL generated by the JCL command:

- The IPICMD DD statement contains the series of user-modifiable batch commands built from the activated reports in the Report Set. A description of the Report Set appears as comments (* in column 1) preceding the commands. It replaces the IPIRSET DD statement generated by the JCL command.
- The command input stream contains INCL/EXCL command parameters built from the Object Lists used by the Report Set. They replace the IPIOBJL DD statement generated by the JCL command.
- The command input stream contains FIELDS command parameters built from the Report Forms used by the Form-based reports and extracts in the Report Set. They replace the IPIFORM DD statement generated by the JCL command.
- The IMSPACEX command identifies IMS Connect reports.

This facility allows you to build report JCL with command input once and store it into an external library for submitting at any time, independent of the original Report Set. Individual report options, such as Date/Time report intervals or object selection filters (such as Transaction Code, Connect Client ID, TCP/IP Port) can then be modified in the JCL and submitted without making changes to the original Report Set.

Sample JCL with command input: IMS Connect Report Set

```
//SEC1 JOB (ACCOUNT),'NAME'
//IPI      EXEC PGM=IPIMAIN
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Input Data Sets
//CEXIN    DD  DISP=SHR,
//             DSN=Journal.Data.Set
//*  Sysout data set
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  Report time range
//IPIOPTS  DD  *
  IMSPACEX START(-1,10:00:00.00),STOP(-1,12:00:00.00)
//*  Report Set Command Input
//IPICMD   DD  *
* IMS PA Connect Report
* Report Set Name - CEXEXAMP
* Description - Connect Report Set Example
* Connect Report Global Options
          IMSPACEX     PAGESIZE(60)
* Transit Time Analysis Report
          IMSPACEX     ANALYSIS(DDNAME(ANAL0001),
                       BY(TRANCODE,TIME)
                       INTERVAL(00:05:00),
                       PEAK(95))
* Transit Log Report
          IMSPACEX     LOG(DDNAME(LOG))
* Port Report
          IMSPACEX     PORT(DDNAME(PORT),
                       INTERVAL(00:01:00),
                       PEAK(90))
* TPipe Report
          IMSPACEX     TPIPE(DDNAME(TPIPE),
                       INTERVAL(00:01:00))
* ACK/NAK Report
          IMSPACEX     ACKN(DDNAME(ACKNAK),
                       INTERVAL(00:01:00))
* Exception Report
          IMSPACEX     EXCEPT(DDNAME(EXCEPT),
                       LIST,
                       SUMMARY)
* Trace Report
          IMSPACEX     TRACE(DDNAME(TRACE))
          IMSPACEX     EXECUTE
/*
```

Figure 292. JCL with command input: IMS Connect reporting

IMSPACEX **command**

The IMSPACEX command requests an IMS Connect report. Multiple Connect reports can be requested in the one batch job.

Format

```
          IMSPACEX     operands
```

The last IMSPACEX command in the batch job must include EXECUTE as its last operand. For clarity, ensure that there is only one EXECUTE operand in the batch job. The EXECUTE operand informs IMS PA that all Connect reports have been requested, and processing of IMS Connect data can commence.

If IMSPACEX EXECUTE is omitted, IMS PA performs syntax checking of the input commands but does not execute any reports.

See "IMS Connect report operands" on page 606 for a description of the IMSPACEX operands.

Tip: Multiple reports of the same type can be requested. For example:

```
IMSPACEX  ANAL(BY(TC)),ANAL(BY(TIME))
```

Example

```
IMSPACEX     START(2018/03/13,10:00),STOP(2018/03/13,11:00)
IMSPACEX     ANALYSIS(BY(TRANCODE,TIME),INTERVAL(00:15:00),PEAK(85))
IMSPACEX     LOG,ACKN,PORT,TPIPE,EXCEPT,GAP,TRACE
IMSPACEX     EXECUTE
```

From this example, IMS PA will produce the following reports for the time period 10:00 a.m. to 11:00 a.m. on March 13, 2018:

- Transit Analysis
- Transit Log
- ACK/NAK
- Port Usage
- Resume Tpipe
- Exception Events
- Gap Analysis
- Transit Event Trace

COPY command

The COPY command reads one or more members of the command library. The command library must be a partitioned data set defined by the `CMDLIB DD` statement.

COPY puts pre-coded commands from the command library into the input stream.

Format

```
COPY        member1[,member2,...]
```

The only operands for the COPY command are one or more member names in the command library. Each member may in turn contain COPY commands. The EXECUTE operand may be within or following the last COPY command.

Member names are scanned from left to right, and members are read in the order specified. Copied members may themselves employ the COPY command. To prevent COPY loops, any request for a member currently queued for read causes an error and the member is not processed. An error message is issued for any member not found in the command library.

COPY allows users to retrieve pre-coded commands and include them in the input stream. Pre-coded commands would usually include production level command data, or static command input like Include and Exclude lists, or commonly used reports.

Example

In this example, CEXREPS contains a common set of IMS Connect report commands.

```
IMSPACEX     START(2018/02/22,10:00),STOP(2018/02/22,11:00)
COPY         CEXREPS
IMSPACEX     EXECUTE
```

IMS Connect report operands

The IMSPACEX command has two categories of operand: the reports and their specific options, and the general options (Global options) that apply to multiple reports.

The IMSPACEX operands that produce the IMS Connect reports are:

ANALYSIS
: Transit Analysis

LOG
: Transit Log

TRANEXTR
: Transit Extract

LIST
: Transaction Transit List (Form-based)

SUMMARY
: Transaction Transit Summary (Form-based)

INDEX
: IMS Connect Transaction Index

PORT
: Port Usage

TPIPE
: Resume Tpipe

ACKN
: ACK/NAK

EXCEPT
: Exception Events

GAP
: Gap Analysis

TRACE
: Transit Event Trace

For further details of the operands and their default values, see the description of the corresponding dialog options in Chapter 24, "Requesting IMS Connect reports," on page 567.

Connect Global Options

The Connect Global Options define output and general control information for the IMS Connect reports.

Format

```
IMSPACEX    [PAGESIZE(nnn),]              default 60 lines
            [NOPCTSIGN,]                  default print % sign
            [DISCARDS,]
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
            [INCL(CLIENT(list))|EXCL(CLIENT(list)),]
            [INCL(TPIPE(list))|EXCL(TPIPE(list)),]
            [INCL(PORT(list))|EXCL(PORT(list))])
```

PAGESIZE
: Number of print lines per page.

NOPCTSIGN
: Do not print % sign in report output.

DISCARDS
: When inflight transaction processing is requested, print the discarded transactions report.

INCL|EXCL
: Selection Criteria. If individual reports specify Selection Criteria, then it overrides this Global specification.

Example

```
IMSPACEX     PAGESIZE(120),
             EXCL(TRANCODE(MM*)),
             INCL(DATASTORE(IMT*,IMP*))
```

Related reference:

"Connect Global Options" on page 574
The IMS Connect Global Options define general control information that applies to all reports within the Report Set.

ANALYSIS: Transit Analysis report

The ANALYSIS operand of the IMSPACEX batch command requests the IMS Connect Transit Analysis report.

The Analysis report provides a summary of IMS Connect transaction performance. Performance data can be summarized by one or two sort keys including Time of Day, Transaction Code, User ID, Datastore (original destination and target) and Port number.

Performance statistics are provided as averages, and optionally, peak percentiles. For example, you can specify 90 to report the elapsed time within which 90% of transactions completed.

Format

```
IMSPACEX     ANALYSIS(
            [BY(order1)|
             BY(order1,order2),]        default BY(TRANCODE)
            [DDNAME(ddname),]           default ANAL0001,ANAL0002,...
            [INTERVAL(hh:mm:ss),]       default 00:01:00 (1 minute)
            [PEAK(nnn),]                50-100%, default no peak
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
            [INCL(CLIENT(list))|EXCL(CLIENT(list)),]
            [INCL(PORT(list))|EXCL(PORT(list))])
```

You can request multiple Analysis reports in the one job. The default ddname is ANAL*nnnn* where *nnnn* is 0001 to 9999. The sort order of each report is according to the order of the fields in the BY operand.

The sort fields are the first one or two columns of the report, and can be any one or two of the following fields:

TRANCODE
: Transaction Code (default)

USERID
: User ID

PORT TCP/IP Port Number
DSORIG
: Original Datastore
DSTARG
: Target Datastore
CLIENTID
: Connect Client ID
TIME Time Interval

Other report operands are:
DDNAME
: The ddname for the recap report output. The default is `ANAL0001, ANAL0002, ...`
INTERVAL
: Summarization time interval when report is ordered by TIME
PEAK Peak percentile, optional
INCL | EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, Datastore, Client, or Port number

Example

Two Analysis reports, the first ordered by Transaction Code and Time over 5 minute time intervals and filtered on Transaction Code, and the second ordered by Connect Client ID and filtered on Connect Client ID. 95% peak percentile is requested for both to check that 95% of transactions completed within a certain time.

```
IMSPACEX     ANALYSIS(BY(TRANCODE,TIME),
                      DDNAME(ANAL0001),
                      INTERVAL(00:05:00),
                      PEAK(95),
                      INCLUDE(TRANCODE(A*,P*,T*)))

IMSPACEX     ANALYSIS(BY(CLIENTID),
                      DDNAME(ANAL0002),
                      PEAK(95),
                      EXCLUDE(CLIENT(MP1*,XP1*,ZP1*)))
```

Related reference:

"Connect Transit Analysis report" on page 577
The IMS Connect Transit Analysis report provides a summary of IMS Connect transaction performance.

LOG: Transit Log report

The LOG operand of the IMSPACEX batch command requests the IMS Connect Transit Log report.

The Log report provides performance details about every transaction processed by IMS Connect. Information from IMS Connect Extensions event records is collected to provide a complete picture of transaction processing. The order of transactions in the report is based on when they end, and not when they start.

Format

```
IMSPACEX     LOG(
            [DDNAME(ddname),]           default LOG
            [NOADDIDENT|ADDIDENT,]
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
            [INCL(CLIENT(list))|EXCL(CLIENT(list)),]
            [INCL(PORT(list))|EXCL(PORT(list))])
```

Report operands are:

DDNAME
: The DDname for the recap report output. The default is LOG.

NOADDIDENT
: For each input message, report the primary identification details: Transaction Code, Target Datastore, and Port Number. This is the default.

ADDIDENT
: For each input message, report the primary identification details: Transaction Code, Target Datastore, and Port Number. Immediately underneath, report additional identification details: User ID, Original Datastore, and Client ID.

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, Datastore, Client, or Port Number.

Example

```
IMSPACEX     LOG(
             INCL(TRANCODE((M*,Z*)),
             INCL(USERID(SC*,SK*,AS*,JH*,PC*,SP*)),
             DDNAME(LOG))
```

Related reference:

"Connect Transit Log report" on page 579
The IMS Connect Transit Log provides performance details about every transaction processed by IMS Connect.

TRANEXTR: Transit Extract

The TRANEXTR operand of the IMSPACEX batch command requests the IMS Connect Transit Extract. This creates extract data sets of performance details about every transaction processed by IMS Connect.

You can request a List or Summary Extract, or both. The List Extract provides similar details to the Connect Transit Log report, while the Summary Extract summarizes these details over a specified time interval. The format of the List Extract record is shown in "Connect List extract" on page 768, and the Summary Extract record is shown in "Connect Summary extract" on page 764.

The extract data is suitable for exporting to DB2 for further manipulation and analysis. Sample DB2 jobs are supplied in the SIPISAMP library to help you create and load DB2 tables and run SQL queries:

- For the List Extract:
  - Sample DDL job IPICLDDL
  - Sample Load job IPICLLOD
  - Sample SQL queries IPICQML1 and IPICQML2

- For the Summary Extract:
  - Sample DDL job IPICSDDL
  - Sample Load job IPICSLOD
  - Sample SQL queries IPICQMS1 and IPICQMS2

Format

```
         IMSPACEX     TRANEXTR(
                     [DDNAME(ddname),]           default TRANEXTR
                     [LIST,]
                     [SUMMARY,]
                     [EXTENDED,]
                     [INTERVAL(hh:mm:ss),]       default 00:15:00 (15 minutes)
                     [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
                     [INCL(USERID(list))|EXCL(USERID(list)),]
                     [INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
                     [INCL(CLIENT(list))|EXCL(CLIENT(list)),]
                     [INCL(PORT(list))|EXCL(PORT(list))])
         IMSPACEX     EXECUTE
/*
//IPICTRLS DD  DSN=List extract file,DISP=(NEW,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(5,5),RLSE)
//IPICTRSU DD  DSN=Summary extract file,DISP=(NEW,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
```

One or both of the following extracts can be requested.

LIST Transit List extract.

SUMMARY
: Transit Summary extract. INTERVAL is required.

Other extract options are:

DDNAME
: The ddname for the recap extract output. The default is TRANEXTR.

EXTENDED
: Extend the extract record format to include additional fields, such as IMS Connect Extensions exit name (form field EXITNAME). Refer to the Chapter 41, "Glossary of Report Form field names," on page 777 for the list of available fields.

INTERVAL
: Summarization time interval.

INCL | EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, Datastore, Client, or Port number.

Example

```
         IMSPACEX     TRANEXTR(LIST,SUMMARY,
                      INTERVAL(00:15:00),
                      INCL(TRANCODE((M*,Z*)),
                      INCL(USERID(SC*,SK*,AS*,JH*,PC*,SP*)),
                      DDNAME(TRANEXTR))
```

Related reference:

"Connect Transit Extract" on page 580
The IMS Connect Transit Extract provides performance details about every transaction processed by IMS Connect. You can request a List or Summary Extract, or both. The List Extract provides similar details to the Connect Transit Log report, while the Summary Extract summarizes these details over a specified time interval.

LIST: Transaction Transit List report and extract (Form-based)

The LIST operand of the IMSPACEX batch command requests the Transaction Transit List report or extract for IMS or Connect fields.

Format

```
IMSPACEX    LIST(
           [DDNAME(ddname),]           default LISTnnnn
           [FROM(date,time),]
           [TO(date,time),]
           [EXTRACT(ddname),]          default LISXnnnn
           [MATCH|NOMATCH,]
           [STARTLVL(n),]              default 2
           [COMPLVL(n),]               default 3
           [COMPLVLC(n),]              default 2
           [PRECISION(n),]             default 3
           [GROUP|NOGROUP|SECGROUP,]
           [OUTPUTMSG|NOOUTPUTMSG,]
           [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
           [INCL(LTERM(list))|EXCL(LTERM(list)),]
           [INCL(USERID(list))|EXCL(USERID(list)),]
           [INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
           [INCL(CLIENT(list))|EXCL(CLIENT(list)),]
           [INCL(PORT(list))|EXCL((PORT(list)),]
           [DELIMIT(field-delimiter)|NODELIMIT,]       default , (comma)
           [FLOAT|NOFLOAT,]
           [LABELS|NOLABELS,]
           [FIELDS(field1,...)])
```

DDNAME
: DDname for the report output. The default is LIST*nnnn* where *nnnn* is a sequential number in the range 0001–9999.

FROM-TO
: The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

EXTRACT
: DDname for the extract output. The default is LISX*nnnn* where *nnnn* is a sequential number in the range 0001–9999.

MATCH | NOMATCH

MATCH
: For combined reporting, include only Connect and IMS transactions for which full end-to-end data is available. Note that the Completion Level influences which transactions are available for selection.

NOMATCH
: For combined reporting, include all Connect and IMS transactions.

STARTLVL
: Specify a value in the range 1–3 to specify the minimum transaction start level for reporting.

COMPLVL
: Specify a value in the range 0–6 to specify the minimum IMS transaction completion level for reporting.

COMPLVLC
Specify a value in the range 0–4 to specify the minimum Connect transaction completion level for reporting.

PRECISION
The precision of numeric fields. Numeric fields can be formatted to 3, 4, 5, or 6 decimal places, where 3 is millisecond precision and 6 is microsecond precision.

GROUP | NOGROUP | SECGROUP

GROUP
Indicates that a 1000's separator in time and count fields is to be included in the output. The separator will be a comma for count fields and a decimal point for time fields.

NOGROUP
Indicates that a 1000's separator in time and count fields will not be included in the output.

SECGROUP
Indicates that the separator character will delineate the decimal point only. Applies to time fields only and assumes GROUP for count fields.

OUTPUTMSG | NOOUTPUTMSG

OUTPUTMSG
Report all output messages from the transaction.

NOOUTPUTMSG
Report only the first output message for the transaction.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, User ID, Datastore (IMS ID), Client ID, TCP/IP Port number.

DELIMIT | NODELIMIT

DELIMIT
The field delimiter, enclosed in quotes, to be used to separate each data field in the extract data set.

NODELIMIT
A field delimiter is not to be used to separate each data field in the extract data set.

LABELS | NOLABELS

LABELS
The first record to be written to the extract data set is to be a field labels record.

NOLABELS
Field labels are to be omitted from the extract data set.

FLOAT | NOFLOAT

FLOAT
Write numeric fields in the extract in FLOAT format. Specify FLOAT if you plan to import the extract into a DB2 table. When the DB2 load utility is used, it will interpret all numerical fields

reliably and consistently in FLOAT format. Time fields are in units of seconds and count fields are real numbers.

NOFLOAT
Numeric fields in the extract will be written in character format according to the Precision and Digit Grouping options. This is suitable when importing the extract data into spreadsheets that expect character-based data.

FIELDS
Specifies which fields are included in the report or extract, their order, and format. Refer to Chapter 41, “Glossary of Report Form field names,” on page 777 for the list of available fields. If the FIELDS operand is omitted, the default report or extract is produced.

Example

```
IMSPACEX LIST(FIELDS(USERID,
                     CONNLTOK,
                     TIMEOUT,
                     TRANCODE,
                     USERID,
                     XMITEXIT))
```

Related concepts:

“LIST Report Form” on page 248
The LIST Report Form can be used to tailor the format and content of the Transaction Transit List report or extract in a Log or Connect Report Set.

Related reference:

“Transaction Transit List report and extract” on page 583
The Form-based Transit List in the CEX Report Set is similar to the Form-based Transit List in the **Log** Report Set.

SUMMARY: Transaction Transit Summary report and extract (Form-based)

The SUMMARY operand of the IMSPACEX batch command requests a Transaction Transit Summary Report or Extract for IMS and Connect fields.

Format

```
IMSPACEX    SUMMARY(
           [DDNAME(ddname),]           default SUMMnnnn
           [FROM(date,time),]
           [TO(date,time),]
           [INTERVAL(hh:mm:ss),]       default 00:01:00
           [EXTRACT(ddname),]          default SUMXnnnn
           [MATCH|NOMATCH,]
           [STARTLVL(n),]              default 2
           [COMPLVL(n),]               default 3
           [COMPLVLC(n),]              default 2
           [PRECISION(n1,n2),]             default 3,0
           [GROUP|NOGROUP|SECGROUP,]
           [TOTALS(n)|NOTOTALS,]       default 0
           [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
           [INCL(LTERM(list))|EXCL(LTERM(list)),]
           [INCL(USERID(list))|EXCL(USERID(list)),]
           [INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
           [INCL(CLIENT(list))|EXCL(CLIENT(list)),]
           [INCL(PORT(list))|EXCL((PORT(list)),]
           [DELIMIT(field-delimiter)|NODELIMIT,]
           [FLOAT|NOFLOAT,]
           [LABELS|NOLABELS,]
           [FIELDS(field1[(options)],...)])
```

DDNAME
: DDname for the report output. The default is SUMM*nnnn* where *nnnn* is a sequential number in the range 0001–9999.

FROM-TO
: The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

EXTRACT
: DDname for the extract output. The default is SUMX*nnnn* where *nnnn* is a sequential number in the range 0001–9999.

INTERVAL
: Applies when you want to summarize activity over time. It is used when the SUMMARY Report Form has one or both of the sort fields STARTIMS or STARTCON included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each.

MATCH | NOMATCH

MATCH
: For combined reporting, include only Connect and IMS transactions for which full end-to-end data is available. Note that the Completion Level influences which transactions are available for selection.

NOMATCH
: For combined reporting, include all Connect and IMS transactions.

STARTLVL
: Specify a value in the range 1–3 to specify the minimum transaction start level for reporting.

COMPLVL
Specify a value in the range 0–6 to specify the minimum transaction completion level for reporting.

COMPLVLC
Specify a value in the range 0–4 to specify the minimum Connect transaction completion level for reporting.

PRECISION
The precision of numeric form fields. Default: `PRECISION(3,0)`

The first value *n1* specifies the precision of time-based fields, from `3` (millisecond precision) to `6` (microsecond precision).

The second value *n2* specifies the precision of count fields, applicable only when reported as average, from `0` to `2` decimal places.

GROUP | NOGROUP | SECGROUP

GROUP
Indicates that a 1000's separator in time and count fields is to be included in the output. The separator will be a comma for count fields and a decimal point for time fields.

NOGROUP
Indicates that a 1000's separator in time and count fields will not be included in the output.

SECGROUP
Indicates that the separator character will delineate the decimal point only. Applies to time fields only and assumes GROUP for count fields.

TOTALS | NOTOTALS

TOTALS
The grand total and the level of subtotaling required. A totals level of 0 will produce grand totals only in the report. Specify a totals level in the range 1–7 to produce both a grand total and subtotals to the corresponding key level.

NOTOTALS
No grand totals or subtotals will be included in the report.

INCL | EXCL
Selection criteria to filter (include or exclude) the report on Transaction Code, LTERM, User ID, Datastore (IMS ID), Client ID, TCP/IP Port number.

DELIMIT | NODELIMIT

DELIMIT
The field delimiter, enclosed in quotes, to be used to separate each data field in the extract data set.

NODELIMIT
A field delimiter is not to be used to separate each data field in the extract data set.

LABELS | NOLABELS

LABELS
The first record to be written to the extract data set is to be a field labels record.

NOLABELS
: Field labels are to be omitted from the extract data set.

FLOAT | NOFLOAT

FLOAT
: Write numeric fields in the extract in FLOAT format. Specify FLOAT if you plan to import the extract into a DB2 table. When the DB2 load utility is used, it will interpret all numerical fields reliably and consistently in FLOAT format. Time fields are in units of seconds and count fields are real numbers.

NOFLOAT
: Numeric fields in the extract will be written in character format according to the Precision and Digit Grouping options. This is suitable when importing the extract data into spreadsheets that expect character-based data.

FIELDS
: Specifies which fields are included in the report or extract, the order in which they appear in the report, and the statistical functions used to summarize the data. Refer to the Chapter 41, "Glossary of Report Form field names," on page 777 for the list of available fields. If the FIELDS operand is omitted, the default report or extract is produced.

  Up to 8 sort key fields can be specified, and at least one must be specified. The order of the key fields in the list defines the sort precedence, with the first key field being the major sort field. For each key field, the report can be ordered in ascending (ASCEND) or descending (DESCEND) sequence. The default is ASCEND. Sort key fields identify the grouping required for summarization, and can be STARTIMS, STARTCON, or any character field.

  The sort key fields must be specified first in the list ahead of the numeric fields. The only field that can appear ahead of a key field is TRANCNT.

  In addition to the sort key fields, one numeric field can be selected as ascending or descending to activate Alternate Sequencing. This will change the order of report lines from sort key to numeric field sequence. For example, specify `RESPCON(DESCEND)` to see the transactions with the highest response time at the top of the report. Note that grouping by sort key remains unaffected by alternate sequencing.

  TRANCNT is a special field computed by IMS PA. It reports the number of Connect transactions. TRANCNT can be reported anywhere on the print line by including it in the FIELDS specification.

  Key fields must be specified first in the FIELDS list.

  All numeric fields (except TRANCNT) are summarized using any number of the following statistical functions:

  AVE Average value (this is the default if a field is specified without a function)

  COUNT
  : Number of transactions with a value

  DATE STARTIMS or STARTCON field: date in the format *yyyy-mm-dd*

  DEV Standard deviation

  HIDE Include field in key but don't print

  ISO STARTIMS or STARTCON field: date and time in the format *yyyy-mm-dd hh.mm.ss*

  MAX Maximum value

  MIN Minimum value

TIME STARTIMS or STARTCON field: time in the format *hh.mm.ss* (this is the default if format is not specified)

TOTAL
Sum total

nnn Peak percentile value in the range 50%–100%

RNGPERC
Distribution: Percentage of values from a specified limit value or within a range. Specify one of the following options:

RNGPERC(*operator value***)**
Specify a reporting limit. Use this parameter report a distribution by splitting the values reported by a single field into different columns. The following values of *operator* are valid: =, >, >=, <, and <=.

Character ranges: Specify a character range with character-based fields. Where a blank or null value is valid for a particular field, use a hyphen (-).

RNGPERC(*from - to***)**
Report on a range of values greater than or equal to the value of *from*, and less than (but *not equal*) to the value of *to*.

A character range can not be specified using this option.

RNGCOUNT
Distribution: Count of values from a specified limit value or within a range. Specify one of the following options:

RNGCOUNT(*operator value***)**
Specify a reporting limit. The following values of *operator* are valid: =, >, >=, <, and <=.

Character ranges: Specify a character range with character-based fields. Where a blank or null value is valid for a particular field, use a hyphen (-).

RNGCOUNT(*from - to***)**
Report on a range of values greater than or equal to the value of *from*, and less than (but *not equal*) to the value of *to*.

A character range can not be specified using this option.

Example

```
IMSPACEX SUMMARY(FIELDS(STARTCON(ASCEND),
                        TRANCODE(ASCEND),
                        TRANCNT,
                        RESPCON(AVE),
                        RESPCON(80),
                        PREOTMA(AVE)))
```

Related concepts:

"SUMMARY Report Form" on page 251
The SUMMARY Report Form defines the format and content of the Transaction Transit Summary report and extract.

Related reference:

"Transaction Transit Summary report and extract" on page 586
The Form-based Transit Summary report is similar to the Form-based Transit List report.

INDEX: IMS Connect Transaction Index

The INDEX operand of the IMSPACEX batch command requests the IMS Connect Transaction Index.

The IMS Connect Transaction Index is a specialized extract file created by IMS Performance Analyzer batch reporting. Each record in the index represents an IMS transaction and contains cumulative information from the IMS Connect Extensions about that transaction. It is used by IMS Problem Investigator for tracking transactions involving IMS Connect to assist with problem determination. For more information, see "IMS Connect Transaction Index" on page 588.

Format

```
IMSPACEX  INDEX
IMSPACEX  EXECUTE
```

Related tasks:

"Creating an IMS Connect Transaction Index" on page 588
The IMS Connect Transaction Index is requested from an IMS Performance Analyzer CEX report set and associated INDEX batch command.

PORT: Port Usage report

The PORT operand of the IMSPACEX batch command requests an IMS Connect Port Usage report.

This report provides a summary of the TCP/IP ports used by the IMS Connect system. For each port, average and other summary statistics are provided for port depth, message processed count, and ACCEPT, READ and WRITE Socket counts.

The report can optionally be summarized by time interval.

Format

```
IMSPACEX     PORT(
            [DDNAME(ddname),]           default PORT
            [INTERVAL(hh:mm:ss),]       default 00:01:00 (1 minute)
            [PEAK(nnn),]                50-100%, default 90%
            [INCL(PORT(list))|EXCL(PORT(list))])
```

Report operands:

INTERVAL
: Summarization time interval, optional.

PEAK
: Peak percentile, default 90%.

Other report options are:

DDNAME
: The ddname for the report output. The default is PORT.

INCL | EXCL
: Selection criteria to filter (include or exclude) the report on port number.

Example

```
IMSPACEX     PORT(DDNAME(PORT),
                  INTERVAL(00:30:00),
                  PEAK(95),
                  INCLUDE(PORT((101,200),(301,999))))
```

Related reference:

"Connect Port Usage report" on page 592
The IMS Connect Port Usage Report provides a summary of the TCP/IP ports used by the IMS Connect system.

TPIPE: Resume Tpipe report

The TPIPE operand of the IMSPACEX batch command requests the IMS Connect Resume Tpipe report.

This report provides a summary of Resume Tpipe command activity. The standard report provides command statistics, including command count, and a breakdown by command type: Auto (with timeout), No Auto, and Single. Command statistics include count of commands issued, IMS messages sent, Negative responses (Tpipe queue empty), NAK, and timeout interval.

The extended version of the report supports all of the different resume tpipe types and options.

The standard report can optionally be summarized by time interval, but the extended report cannot.

Format

```
IMSPACEX     TPIPE(
            [DDNAME(ddname),]           default TPIPE
            [INTERVAL(hh:mm:ss),]       default 00:01:00 (1 minute)
             FORMAT1|FORMAT2,           default FORMAT1
            [INCL(TPIPE(list))|EXCL(TPIPE(list))])
```

Report operands are:

DDNAME
: The ddname for the report output. The default is `TPIPE`.

INTERVAL
: Summarization time interval, optional. The default is 1 minute. INTERVAL is supported for the standard report (FORMAT1) but not the extended report (FORMAT2).

FORMAT1 | FORMAT2
: FORMAT1 produces the standard version of the report. FORMAT2 produces the extended version of the report.

INCL | EXCL
: Selection criteria to filter (include or exclude) the report on Tpipe.

Example

```
IMSPACEX     TPIPE(INTERVAL(00:20:00),
                   DDNAME(TPIPE),
                   FORMAT2,
                   INCLUDE(TPIPE(A*,P*,T*)))
```

Related reference:

"Connect Resume Tpipe report" on page 593
The IMS Connect Resume Tpipe report provides a summary of Resume Tpipe command activity.

ACKN: ACK/NAK report

The ACKN operand of the IMSPACEX batch command requests the IMS Connect ACK/NAK report.

This report provides a summary of acknowledgement activity for transactions that use Sync Level=CONFIRM. Positive acknowledgement (ACK) and negative acknowledgement (NAK) statistics are reported for each transaction code. NAK is further broken down as negative acknowledgement from either OTMA (NAK sense code) or from the Client.

The report can optionally be summarized by time interval.

Format

```
IMSPACEX     ACKN(
            [DDNAME(ddname),]           default ACKNAK
            [INTERVAL(hh:mm:ss),]       default 00:01:00 (1 minute)
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
            [INCL(CLIENT(list))|EXCL(CLIENT(list)),]
            [INCL(PORT(list))|EXCL(PORT(list))])
```

Report operands are:

DDNAME
: The ddname for the report output. The default is ACKNAK.

INTERVAL
: Summarization time interval. The default is 1 minute.

INCL | EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, Datastore, Client, or Port number.

Example

```
IMSPACEX     ACKN(DDNAME(ACKNAK),
                  INTERVAL(00:05:00),
                  INCLUDE(TRANCODE(A*,P*,T*)),
                  EXCLUDE(CLIENT(MP1*,XP1*,ZP1*)))
```

Related reference:

"Connect ACK/NAK report" on page 595
The IMS Connect ACK/NAK Report provides a summary of acknowledgement activity for transactions that use Sync Level=CONFIRM.

EXCEPTION: Exception Events report

The EXCEPTION operand of the IMSPACEX batch command requests the IMS Connect Exception Events report.

This report provides details about events that cause transactions to fail or that signal critical resources are no longer available. The Exception List report provides

a list (in chronological order) of all exception events. The Exception Summary report provides a recap of each exception event encountered and a count of the number of times it occurred.

Format

```
IMSPACEX     EXCEPT(
            [DDNAME(ddname),]          default EXCEPT
            [LIST,]
            [SUMMARY]
```

One or both of the following reports can be requested.
LIST Exception List report
SUMMARY
Exception Summary report (default)

Other report options are:
DDNAME The ddname for the report output. The default is EXCEPT.

Examples

Taking defaults (the Summary report):

```
IMSPACEX     EXCEPT
```

Both reports:

```
IMSPACEX     EXCEPTION(LIST,SUMMARY,DDNAME(EXCEPT))
```

Related reference:

"Connect Exception Events report" on page 597
The IMS Connect Exception Events Report provides details about events that cause transactions to fail or that signal critical resources are no longer available.

GAP: IMS Connect Gap Analysis report

The GAP operand of the IMSPACEX batch command requests the IMS Connect Gap Analysis report.

This report looks for periods of time where records are not being cut, potentially highlighting an external system event that may have caused IMS Connect to slow down.

Format

```
IMSPACEX     GAP(
            [THRESHOLD(s.thmiju),]          default 5 seconds
            [DDNAME(ddname),]               default GAPS
            [FROM(date,time),]
            [TO(date,time)])
```

Report options are:
THRESHOLD

Threshold for the report output. The THRESHOLD defines the maximum elapsed time tolerated between records. Every gap longer than the threshold is reported.

The value of THRESHOLD must be within the range `0.000001` to `9.999999`. The default is `5.000000` seconds.

DDNAME
: DDname for the report output. The default is GAPS.

FROM-TO
: The reporting interval, either a date-time range or a time slot. The time slot can span midnight. The date can be either a calendar date or a relative date. If both dates are specified, they must be in the same format.

Example

Taking defaults:

```
IMSPACEX     GAP
IMSPACEX     EXECUTE
```

Related reference:

"Connect Gap Analysis report" on page 598
The IMS Connect Gap Analysis report looks for periods of time where journal records are not being cut, potentially highlighting an external system event that may have caused IMS Connect to slow down.

TRACE: Transit Event Trace report

The TRACE operand of the IMSPACEX batch command requests the IMS Connect Transit Event Trace report.

This trace report provides a list of transactions, each with detailed information about every event in the life of that transaction.

At a glance, you can see when a transaction starts, followed by all the events associated with the transaction in the order they occurred.

Format

```
IMSPACEX     TRACE(
            [DDNAME(ddname),]           default TRACE
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(DATASTORE(list))|EXCL(DATASTORE(list)),]
            [INCL(CLIENT(list))|EXCL(CLIENT(list)),]
            [INCL(PORT(list))|EXCL(PORT(list))])
```

The report options are:

DDNAME
: The ddname for the report output. The default is `TRACE`.

INCL|EXCL
: Selection criteria to filter (include or exclude) the report on Transaction Code, User ID, Datastore, Client, or Port number.

Examples

Taking defaults:

```
IMSPACEX     TRACE
```

With filtering:

```
IMSPACEX     TRACE(DDNAME(TRACE),
                   EXCL(TRANCODE(Z*)),
                   INCL(USERID(A*)),
                   INCL(DATASTORE(A*)),
                   INCL(CLIENT(A*)),
                   INCL(PORT((101,300),(501,800),999)))
```

Related reference:

"Connect Transit Event Trace report" on page 599
The IMS Connect Trace provides a list of transactions, each with detailed information about every event in the life of that transaction.

Part 8. OMEGAMON TRF reporting

IMS PA provides both an online dialog and a batch interface. This part describes how to request and run OMEGAMON TRF reports using the dialog and batch commands.

Chapter 26. Requesting OMEGAMON TRF reports

IMS Performance Analyzer (IMS PA) complements IBM Tivoli OMEGAMON XE for IMS on z/OS Version 4.1 (program number 5698-A34) or later by reporting transaction accounting statistics written to the IMS log by the Transaction Reporting Facility (TRF).

OMEGAMON TRF data

The OMEGAMON Transaction Reporting Facility (TRF) provides detailed transaction accounting by collecting performance and resource utilization data for every IMS transaction.

TRF collects the following data for all transactions within IMS:

1. Transaction response time breakdown, CPU time, and other resource usage statistics
2. Full Function and Fast Path database DL/I call count and elapsed time
3. DB2 database call count and elapsed time

Event statistics are collected by OMEGAMON subsystems with the TRF Trace running. You can control the type of data collected (BMP, DBD, DB2, DLI, FP), the destination to which the TRF data is written (LOGS=IMS or SMF, but IMS Performance Analyzer only supports IMS), and the record ID (RECID=160 to 255 decimal, ensuring that it is different to the record ID of other applications that write to the log). The format of the TRF Collector log records is mapped by the Tivoli-supplied macro OMTRF560. IMS Performance Analyzer does not report from TRF Collector log records.

You can then run the TRF post-processor to extract the TRF records from the IMS log data sets. The format of the TRF Extractor output records is mapped by the Tivoli-supplied macro KI2TRFDS. IMS Performance Analyzer reports TRF Extractor output records. See Chapter 35, “OMEGAMON TRF records,” on page 737 for the list of supported TRF record types.

IBM IMS Problem Investigator for z/OS (IMS PI) reports both record formats.

TRF Files for an IMS subsystem

To associate TRF Extractor data sets with an IMS subsystem, use View 5 of the IMS Subsystem panel.

```
                              IMS Subsystem            Row 1 of 1 More: < >
Command ===> _____________________________________________ Scroll ===> PAGE

IMS Subsystem definition:
 IMS Subsystem ID  . . . . ICDE  IMS Version (VRM) . . . 141  +
 Description . . . . . . . TRF extractor detail & logs_________
 RESLIB Data Set . . . . . _____________________________________________
--------------------------------------------------------------------------------
Specify required view . . 5  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
--------------------------------------------------------------------------------
Specify the OMEGAMON TRF Files (in time sequence) for this collection:

/  Exc               Data Set Name (DSN)                 UNIT +  SEQ VOLSER +
_       'IPI000.QADATA.TCOMG008.ICDE.TRF.DET2'_______   ________ ___ ______
****************************** Bottom of data ********************************
```

Specify the OMEGAMON TRF Extractor data set names and attributes in a similar way to IMS log and monitor data sets.

See "Log Files for an IMS Subsystem" on page 174 for a description of the fields, available line actions, and action bar choices.

Note:

- TRF files, like Monitor files, have no repository or register, and so no automated file selection based on start and stop time is available.
- Extractor files may contain data from multiple systems in an IMSPLEX. The system name in the System Definition is not used for JCL generation.
- OMEGAMON TRF Collector records are in the IMS log and as such, the IMS log data sets are specified in the usual way on the IMS log files panel. TRF Collector records can be analyzed by IMS Problem Investigator.

TRF Report Set

IMS PA reports for the OMEGAMON Transaction Reporting Facility (TRF) are specified in a Report Set of type TRF.

To specify TRF report requests:

1. Select option 3 **Report Sets** from the IMS PA primary option menu. A list of the Report Sets in the nominated Report Sets data set is displayed.
2. Define a new TRF Report Set or edit an existing one using line action **S**. For information on how to do this, see "Maintaining Report Sets" on page 125.

```
  File  View  Options  Help
-------------------------------------------------------------------------------
                                Report Sets                    Row 1 to 3 of 3
Command ===> NEW TRFDFLT_____________________________________ Scroll ===> PAGE

Report Sets Data Set . . . : IMSPA.RSCTL

/     Name    Type           Description                Changed        ID
___   BASICCOM CEX  Combined basic - List & Summary  2014/11/08 16:52 RXB
___   DFLTCEX  CEX  IMS Connect daily                2014/04/05 10:42 RXB
___   DFLTLOG  LOG  IMS Log weekly                   2007/01/11 09:00 RXB
```

Figure 293. Defining a new TRF Report Set

Entering NEW on the command line displays a window which prompts you to specify the name and type of Report Set or model on an existing one.

```
                       New Report Set      Enter required field

Specify the name of the new Report Set and the type or model.

Name . . . TRFDFLT_

Type . . . 4  1. Log
              2. Monitor
              3. IMS Connect (includes combined)
              4. OMEGAMON TRF
              5. OMEGAMON ATF
              6. MODEL (specified below)

Model  ____________________________________________________

Press Enter to create the Report Set.
Press Exit or Cancel to cancel the request.
```

Figure 294. New Report Set name and type

You can bypass this prompt window if you enter the command in full, such as:

```
NEW TRFDFLT TRF
```

A panel is then displayed for you to edit the description of the Report Set and specify your report requests.

```
  File  View  SysDefs  Options  Help
-------------------------------------------------------------------------------
EDIT                  Report Set - TRFDFLT                      Line 1 of 12
Command ===> _____________________________________________ Scroll ===> CSR_

Description . . . OMEGAMON TRF basics_________________

Enter "/" to select action.

___           ** Reports **                          Active
      -  ___  Options                                  No
              ___  TRF Global                          No
      -  ___  Database Usage Reports                   No
              S__  DLI Call List                       No
              ___  DLI Call Summary                    No
              ___  DB2 Call List                       No
              ___  DB2 Call Summary                    No
      -  ___  Message Queue Reports (Form-based)       No
              ___  List                                No
              ___  Summary                             No
      -  ___  Trace Reports                            No
              ___  Record Trace                        No
              ** End of Reports **
```

Figure 295. Edit TRF Report Set

The Report Set panel shows the list of all available TRF reports and global options in a tree structure (folder style). See "Report Set menu tree" on page 123 for a description of the tree structure.

Each report can be activated (sets the **Active** column value to `Yes`) or deactivated (`No`). If any changes are made to a report, the dialog will mark the report as active automatically. Each Report Category can be activated or deactivated. Only active reports in active report categories are included in the Report Set at submit time. A Report Set can be submitted for processing only if there is at least one active report in an active report category.

However, you can also use the **RUN** line action to temporarily override the inactive status of a report or report category.

The operation of the TRF Report Set edit panel, such as the commands, line actions, action bar, and PF keys, is similar to that for the other types of Report Set. For example, see Chapter 22, "Requesting Monitor reports," on page 491.

Related concepts:

"Report command format" on page 41
IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

Related reference:

Chapter 27, "OMEGAMON TRF batch interface," on page 651
The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for TRF report requests are described here.

TRF Global Options

The IMS PA TRF Global Options define general control information that applies to more than one report within the TRF Report Set.

IMS PA automatically activates the TRF Global Options if at least one report in the Report Set is active. Conversely, the TRF Global Options are deactivated if no reports are active. You cannot activate or deactivate the TRF Global Options yourself.

To view and edit TRF Global Options for a Report Set:

1. Select the TRF Report Set.
2. Expand the **Options** category using line action S.
3. Select the **TRF Global** category using line action S.

```
                        TRFDFLT - TRF Global Options
Command ===> ____________________________________________________________________

Specify TRF Global options.

Report Options:
 Print Lines per Page  . . 60_   (1-255)
 /  Print "%" sign in Report output
```

Figure 296. TRF Global Options

The TRF global options are:

Print Lines per Page
Default: 60

Specify the number of print lines per page. The specified value applies to all reports in the TRF Report Set.

Valid values are from 1 to 255.

This option generates the PAGESIZE(*nnn*) global operand.

Print "%" sign in Report output
Print the percent sign % in percentage values in report output. This is the default, and applies only to some form-based reporting output.

If not selected, this option generates the NOPCTSIGN global operand.

TRF Database Usage reports

OMEGAMON TRF Database Usage reports provide performance statistics to measure IMS and DB2 database activity.

DLI Call List report

The OMEGAMON TRF DLI Call List report provides a list of IMS Database calls.

There is one record for each database call. A single transaction could have numerous records.

At a glance, you can see when a transaction starts, followed by all the database calls associated with the transaction in the order they occurred.

The report provides statistics on DL/I call elapsed time for both Fast Path and Full Function databases.

To specify the report options, select the Database Usage DLI Call List report in the TRF Report Set.

```
                          TRFDFLT - DLI Call List
Command ===> ____________________________________________________________________

Specify report options.

                                        Report Output DDname  DLICALL__

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
 Database               ___    ________   _
```

Figure 297. TRF DLI Call List report options

The options are as follows:

Report Output DDname
Default: DLICALL

Specify the DDname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Selection Criteria
Default: None specified; include all records.

Selection Criteria can be specified to filter the input data on one or more of the following:
- Transaction Code
- User ID
- IMS Subsystem ID
- Program
- Database (DBD)

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**). Select **List** with a / to identify it as an Object List not a value.

See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

DLICALL(LIST, ...): DLI Call List report

The DLICALL(LIST, ...) operand of the IMSPATRF batch command requests the DLI Call List report.

Format

```
IMSPATRF     DLICALL(LIST,
            [DDNAME(ddname),]           default DLICALL
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list)),]
            [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
            [INCL(DATABASE(list))|EXCL(DATABASE(list))])
IMSPATRF     EXECUTE
```

DLI Call Summary report

The OMEGAMON TRF DLI Call Summary report provides a summary of IMS Database calls for both Fast Path and Full Function databases. By default, the report is summarized by Transaction Code.

Data can be ordered by one or two sort keys including Time of Day, Transaction Code, User ID, IMS Subsystem ID, Program (PSB) name, and Database (DBD) name.

To specify the report options, select the Database Usage DLI Call Summary report in the TRF Report Set.

```
                          TRFDFLT - DLI Call Summary
Command ===> ____________________________________________________________________

Specify report options.

Summary Report Options:
     Ordering Operands  Time      Report
    Level-1 + Level-2 + Interval  DDName
 1. TRANCODE  ________  00:01:00  DLISUMM1
 2. ________  ________  ________  DLISUMM2
 3. ________  ________  ________  DLISUMM3
 4. ________  ________  ________  DLISUMM4
 5. ________  ________  ________  DLISUMM5

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
 Database               ___    ________   _
```

Figure 298. TRF DLI Call Summary report options

The options are as follows:

Ordering Operands

Default: One report sorted by TRANCODE

You can request multiple reports in the one run. For each report, specify the name of one or two fields that you want the report ordered by.

Press **Prompt** (**F4**) to select from a list of available fields. The order of the fields defines the sort order of the report; the level-1 ordering operand is the primary sort field.

If you specify TIME as a sort field, then specify the time interval.

This option generates the BY(*field1*) or BY(*field1*,*field2*) operand.

Time Interval

Default: 00:01:00 (1 minute)

When TIME is an ordering operand, specify the time interval over which you want details summarized.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours).

A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data.

A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce three interval records for each day of data.

Minutes take precedence for an abbreviated entry. For example:

1 becomes 00:01:00
1.1 becomes 00:01:00 (rounded down from 00:01:01)
1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the INTERVAL(*hh*:*mm*:*ss*) operand.

Report Output DDname

Default: DLISUMM1 to DLISUMM5

Specify the DDname to be used for the report output. You can request more than one report. To separate the output, specify a different DDname for each.

This option generates the DDNAME(*ddname*) operand.

Selection Criteria

Default: None specified; include all records.

Selection Criteria can be specified to filter the input data for all DLI Call Summary reports on one or more of the following:

- Transaction Code
- User ID
- IMS Subsystem ID
- Program
- Database (DBD)

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**). Select **List** with a / to identify it as an Object List not a value.

See Chapter 10, “Object Lists,” on page 147 for information on how to define an Object List.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

DLICALL(SUMMARY, ...): DLI Call Summary report

The DLICALL(SUMMARY, ...) operand of the IMSPATRF batch command requests the DLI Call Summary report.

Format

```
IMSPATRF     DLICALL(SUMMARY,
            [BY(order1)|
             BY(order1,order2),]        default BY(TRANCODE)
            [DDNAME(ddname),]           default DLISUMM1,DLISUMM2,...
            [INTERVAL(hh:mm:ss),]       default 00:01:00 (1 minute)
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list)),]
            [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
            [INCL(DATABASE(list))|EXCL(DATABASE(list))])
IMSPATRF     EXECUTE
```

You can request multiple DLI Call Summary reports in the one job. The sort order of each report is according to the order of the fields in the BY operand. The sort fields are the first one or two columns of the report, and can be any one or two of the following fields:

TRANCODE
: Transaction Code (default)

USERID User ID

PROGRAM
: Program (PSB)

IMSID IMS Subsystem ID

TIME Time Interval

DATABASE
: Database (DBD)

DB2 Call List report

The OMEGAMON TRF DB2 Call List report provides statistics on calls to DB2 subsystems.

For IMS DB/DC or DCCTL environments (not DBCTL), the OMEGAMON TRF DB2 Call List report provides a list of DB2 SQL calls. There is one record for each SQL call. A single transaction could have numerous records.

At a glance, you can see when a transaction starts, followed by all the DB2 SQL calls associated with the transaction in the order they occurred.

To specify the report options, select the Database Usage DB2 Call List report in the TRF Report Set.

```
                        TRFDFLT - DB2 Call List
Command ===> ____________________________________________________________

Specify report options.

                                       Report Output DDname  DB2CALL__

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
 DB2 Subsystem ID       ___    ________   _
```

Figure 299. TRF DB2 Call List report options

The options are as follows:

Report Output DDname
Default: DB2CALL

Specify the DDname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Selection Criteria
Default: None specified; include all records.

Selection Criteria can be specified to filter the input data on one or more of the following:
- Transaction Code
- User ID
- IMS Subsystem ID
- Program
- DB2 Subsystem ID (ESSID)

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**). Select **List** with a / to identify it as an Object List not a value.

See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

DB2CALL(LIST, ...): DB2 Call List report

The DB2CALL(LIST, ...) operand of the IMSPATRF batch command requests the DB2 Call List report.

Format

```
IMSPATRF     DB2CALL(LIST,
            [DDNAME(ddname),]           default DB2CALL
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list)),]
            [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
            [INCL(ESSID(list))|EXCL(ESSID(list))])
IMSPATRF     EXECUTE
```

DB2 Call Summary report

The OMEGAMON TRF DB2 Call Summary report provides statistics on SQL calls to DB2 subsystems.

A transaction will have one summary record per correlation ID. By default, the report is summarized by Transaction Code.

Data can be ordered by one or two sort keys including Time of Day, Transaction Code, User ID, IMS Subsystem ID, Program (PSB) name, and DB2 Subsystem ID.

To specify the report options, select the Database Usage DB2 Call Summary report in the TRF Report Set.

```
                          TRFDFLT - DB2 Call Summary
Command ===> ____________________________________________________________

Specify report options.

Summary Report Options:
     Ordering Operands  Time      Report
    Level-1 + Level-2 + Interval  DDName
 1. TRANCODE  ________  00:01:00  DB2SUMM1
 2. ________  ________  ________  DB2SUMM2
 3. ________  ________  ________  DB2SUMM3
 4. ________  ________  ________  DB2SUMM4
 5. ________  ________  ________  DB2SUMM5

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
 DB2 Subsystem ID       ___    ________   _
```

Figure 300. TRF DB2 Call Summary report options

The options are as follows:

Ordering Operands

Default: One report sorted by TRANCODE

You can request multiple reports in the one run. For each report, specify the name of one or two fields that you want the report ordered by.

Press **Prompt** (**F4**) to select from a list of available fields. The order of the fields defines the sort order of the report; the level-1 ordering operand is the primary sort field.

If you specify TIME as a sort field, then specify the time interval.

This option generates the `BY(`*`field1`*`)` or `BY(`*`field1`*`,`*`field2`*`)` operand.

Time Interval

Default: 00:01:00 (1 minute)

When TIME is an ordering operand, specify the time interval over which you want details summarized.

Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours).

A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval records for each hour of data.

A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce three interval records for each day of data.

Minutes take precedence for an abbreviated entry. For example:

1 becomes 00:01:00
1.1 becomes 00:01:00 (rounded down from 00:01:01)
1.1.1 becomes 01:00:00 (rounded down from 01:01:01)

This option generates the `INTERVAL(`*`hh`*`:`*`mm`*`:`*`ss`*`)` operand.

Report Output DDname
Default: DB2SUMM1 to DB2SUMM5

Specify the DDname to be used for the report output. You can request more than one report. To separate the output, specify a different DDname for each.

This option generates the DDNAME(*ddname*) operand.

Selection Criteria
Default: None specified; include all records.

Selection Criteria can be specified to filter the input data for all DB2 Call Summary reports on one or more of the following:
- Transaction Code
- User ID
- IMS Subsystem ID
- Program
- DB2 Subsystem ID (ESSID)

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**). Select **List** with a / to identify it as an Object List not a value.

See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

DB2CALL(SUMMARY, ...): DB2 Call Summary report

The DB2CALL(SUMMARY, ...) operand of the IMSPATRF batch command requests the DB2 Call Summary report.

Format

```
IMSPATRF     DB2CALL(SUMMARY,
            [BY(order1)|
             BY(order1,order2),]        default BY(TRANCODE)
            [DDNAME(ddname),]           default DB2SUMM1,DB2SUMM2,...
            [INTERVAL(hh:mm:ss),]       default 00:01:00 (1 minute)
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list)),]
            [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
            [INCL(ESSID(list))|EXCL(ESSID(list))])
IMSPATRF     EXECUTE
```

You can request multiple DB2 Call Summary reports in the one job. The sort order of each report is according to the order of the fields in the BY operand. The sort fields are the first one or two columns of the report, and can be any one or two of the following fields:

TRANCODE
Transaction Code (default)

USERID User ID

PROGRAM
Program (PSB)

IMSID IMS Subsystem ID

TIME Time Interval

DB2ID DB2 Subsystem ID

TRF Message Queue reports (Form-based)

Form-based reports give you flexibility in message queue reporting. By using Report Forms, you can tailor the format and content of your reports.

You can request just the fields of interest, and control the presentation order and format. You can create Form-based extracts and load them into DB2 tables.

The Message Queue reports provide performance detail about every transaction processed by OMEGAMON TRF extract records.

Form-based Message Queue List report and extract

The Form-based Message Queue List is a detailed list of message queue records.

You can request multiple reports or extracts in a single run. They enable comprehensive, flexible analysis of message queue information giving you a good insight into different facets of response tuning.

You can tailor the format and content of the reports and extracts by specifying Report Forms, the data Precision, what Digit Grouping to use, and the Selection Criteria for filtering the input records. Additional extract options are delimiters, field labels, and whether to format numeric fields for DB2 or spreadsheet analysis.

To specify the report options, select the Message Queue List report in the TRF Report Set.

Report options

```
                        NEWTRF - Message Queue List              More: < >
Command ===> ____________________________________________________________

Specify required view:                  ----- Report Interval ------
1  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ___________
                                        To   __________  ___________

Reports Required:
                                                 Digit   Report
    Type     Form +    DDname    Precision      Group.  Width
 1. REPORT   ________  LIST0001     6 >         SEC >    131 <
 2. ________ ________  LIST0002     6           SEC
 3. ________ ________  LIST0003     6           SEC
 4. ________ ________  LIST0004     6           SEC
 5. ________ ________  LIST0005     6           SEC

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
```

Figure 301. TRF Form-based Message Queue List (View 1 of 2): Report options

The report options are as follows:

Specify required view
Default: 1

To request Form-based reports and extracts, there are too many details for a single view. Scroll Left (F10) or Right (F11) to switch between views, or select a view by number:

1 The Report view is used to specify details of your report request. These details are relevant for both REPORT and EXTRACT requests.

2 The Extract view is used to specify additional details for an EXTRACT request.

Report Interval
Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and to the **To** Date/Time are included in the report.

You can specify one of the following:
- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2008/06/25 7:00 to 2008/06/25 16:30). The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

Type Default: `REPORT`

Specify whether the output is to be a `REPORT` or an `EXTRACT` data set.

Form Default: Not specified.

The name of a LIST Report Form used to tailor the format and content of the report or extract. Press **Prompt** (**F4**) to select from a list of available Forms. If a Form is not specified, an internally defined default Form will be used.

DDname
Default: IMS PA assigns a default DDname of LIST*nnnn* where *nnnn* is a sequential number 0001–9999 to ensure each report has a unique DDname.

The DDname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The DDname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same DDname without consequence, however a mix of reports using the same DDname may interleave the print lines.

In the event of the output being an extract file, the DDname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract data set name and record count.

Precision
Default: 6

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:
- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision

- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

Note: Rounding occurs for elapsed and CPU time values.

Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

Digit Group.
Default: SEC

Digit Grouping affects the formatting of time and count fields. Specify the digit grouping as follows:

YES Digit grouping will include the separator character to delineate each group of three digits, aligned to milliseconds for time and 1000 for count. For time fields, the separator is **.** (period). For count fields, the separator is **,** (comma).

NO No digit grouping.

SEC The separator character will delineate the decimal point only. SEC applies to time fields only and assumes YES for count fields. Use SEC for extracts when time fields must be in seconds and fractions of seconds when importing data into a spreadsheet or database.

Report Width
Report Forms allow you to request reports wider than the standard 132 character page width. The width of the report depends on the fields requested in the Form. The default format of the report is no more than 132 characters wide, but the report width is impacted by changes to the Report Form, Precision, or Digit Grouping. The Report Form defines the fields in the report. Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The **<** symbol indicates that the report width is less than the Report Form width as calculated at **EOR**. The **>** symbol indicates that the report width is greater than the Report Form width as calculated at **EOR**.

Note that you can view reports in full using SDSF, but when you print wide reports, data that exceeds the maximum printer page width will be truncated.

For an extract, report width is not an issue and is not displayed.

Selection Criteria
Default: None specified; include all records.

Records can be included in or excluded from all the Form-based Message Queue List reports based on their Transaction Code, User ID, IMS Subsystem ID, and Program name. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, “Object Lists,” on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

Extract options

```
                      TRFDFLT - Message Queue List                 More: < >
Command ===> ____________________________________________________________

Specify required view:                  ----- Report Interval ------
2  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ___________
                                        To   __________  ___________

Extract Data Sets:

    Type     Form +    Extract Data Set Name                          Disp
 1. REPORT_  ________  ____________________________________________  ___
 2. EXTRACT  ________  ____________________________________________  ___
 3. _______  ________  ____________________________________________  ___
 4. _______  ________  ____________________________________________  ___
 5. _______  ________  ____________________________________________  ___

Extract Options:
/  Include Delimiter                   Delimiter . . , (blank is valid)
/  Include Field Labels
_  Numeric Fields in Float Format
```

Figure 302. TRF Form-based Message Queue List (View 2 of 2): Extract options

The additional extract options are as follows:

Extract Data Set Name
Default: Not specified.

The name of the data set where the extract records are written. If IMS PA is to create the data set at run time, the default allocation attributes specified for **Transaction (MSGQ/FP/Connect) Transit Total Traffic** in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use `DISP=OLD` or `DISP=MOD` according to your request to overwrite or append to the existing data set. Alternatively, you can use a generation data group (GDG) to create a new data set each time the extract is run. When generating the JCL, IMS PA assigns a default DDname of LISX*nnnn* where *nnnn* is a sequential number 0001–9999 to ensure DDnames are unique.

When specifying the data set name, standard TSO conventions apply. For example, if the TSO option `PROFILE PREFIX` is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

Disp Default: Not specified

Specify a disposition of `OLD` to overwrite the data set contents with the new extract data or `MOD` to append the new extract data.

Include Delimiter
Default: /

Select / to use your specified delimiter to separate fields in the extract records. Leave this option blank if you do not want to use a delimiter to separate fields in the extract records.

Delimiter
Default: **,** (comma)

The field delimiter used to separate the data fields in the extract records. The same delimiter is used to separate the field labels, if present.

Include Field Labels
Default: /

Select / to include field labels as the first record written to the extract data set. Use field labels when importing extracts into spreadsheets, to identify the columns and to aid reporting. Leave this option blank if you do not want field labels.

Numeric Fields in Float Format
Default: Not specified.

Select / to write numeric fields in the extract in FLOAT format. Use FLOAT format if you plan to import the extract into a DB2 table. When the DB2 Load Utility is used, it will interpret all numerical fields reliably and consistently in FLOAT format.

- Time fields are in units of seconds. For example, 1.234567 represents 1.234567 seconds.
- Count fields are real numbers. For example, average message length is 100.23 characters.

Leave this option blank if you want numerical fields in the extract to be written in character format according to the **Precision** and **Digit Grouping** options. This is suitable for importing into spreadsheets that expect character-based data.

LIST: Message Queue List report or extract

The LIST operand of the IMSPATRF batch command requests the Message Queue List report or extract.

Format

```
IMSPATRF    LIST(
           [DDNAME(ddname),]        default LISTnnnn
           [FROM(date,time),]
           [TO(date,time),]
           [EXTRACT(ddname),]       default LISXnnnn
           [PRECISION(n),]          default 6
           [GROUP|NOGROUP|SECGROUP,]
           [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
           [INCL(USERID(list))|EXCL(USERID(list)),]
           [INCL(IMSID(list))|EXCL(IMSID(list)),]
           [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
           [DELIMIT(field-delimiter)|NODELIMIT,]     default , (comma)
           [LABELS|NOLABELS,]
           [FLOAT|NOFLOAT,]
            FIELDS(fieldI[(options)],...))
IMSPATRF    EXECUTE
```

For the field names, descriptions, and column headings, see the Chapter 41, “Glossary of Report Form field names,” on page 777.

Form-based Message Queue Summary report and extract

The Form-based Message Queue Summary provides a summary of transaction performance.

You can request multiple reports and extracts in a single run. They enable comprehensive, flexible analysis of message queue information giving you a good insight into different facets of response tuning.

You can tailor the format and content of the reports and extracts by specifying Report Forms, the Time Interval for summarizing activity over time, the Totals Level to include the grand total and optional subtotals, the data Precision, what Digit Grouping to use, and the Selection Criteria for filtering the input records. Additional extract options are delimiters, field labels, and whether to format numeric fields for DB2 or spreadsheet analysis.

To specify the report options, select the Message Queue Summary report in the TRF Report Set.

```
                        NEWTRF - Message Queue Summary            More: < >
Command ===> ____________________________________________________________

Specify required view:                  ----- Report Interval ------
1  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ___________
                                        To   __________  ___________

Reports Required:
                                Time     Totals           Digit  Report
    Type     Form +    DDname   Interval Level  Precision Group. Width
 1. REPORT   ________  SUMM0001 00:01:00   0        6 >   SEC >   100 <
 2. ________ ________  SUMM0002 00:01:00   0        6     SEC
 3. ________ ________  SUMM0003 00:01:00   0        6     SEC
 4. ________ ________  SUMM0004 00:01:00   0        6     SEC
 5. ________ ________  SUMM0005 00:01:00   0        6     SEC

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
```

Figure 303. TRF Form-based Message Queue Summary (View 1 of 2): Report options

The report options are as follows:

Specify required view
Default: 1

To request Form-based reports and extracts, there are too many details for a single view. Scroll Left (F10) or Right (F11) to switch between views, or select a view by number:

1 The Report view is used to specify details of your report request. These details are relevant for both REPORT and EXTRACT requests.

2 The Extract view is used to specify additional details for an EXTRACT request.

Report Interval
Default: Not specified.

Specify the reporting interval. Within the context of the Global Report Interval, records with time stamps on or after the **From** Date/Time and to the **To** Date/Time are included in the report.

You can specify either:

- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2008/06/25 7:00 to 2008/06/25 16:30). The From Date/Time must be before the To Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the From Time greater than the To Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

Type Default: REPORT

Specify whether the output is to be a REPORT or an EXTRACT data set.

Form Default: Not specified.

The name of a SUMMARY Report Form used to tailor the format and content of the report or extract. Press **Prompt** (**F4**) to select from a list of available Forms. If a Form is not specified, an internally defined default Form will be used.

DDname

Default: IMS PA assigns a default DDname of SUMM*nnnn* where *nnnn* is a sequential number 0001–9999 to ensure each report has a unique DDname.

The DDname for the report output. Specify 1–8 alphanumeric characters starting with an alphabetic character. The DDname is mandatory and should be unique to separate the output of multiple reports. Multiple reports of the same type can use the same DDname without consequence, however a mix of reports using the same DDname may interleave the print lines.

In the event of the output being an extract file, the DDname is used for the Extract Recap report output. The Extract Recap report contains information regarding the extract output including extract data set name and record count.

Time Interval

Default: 00:01:00

The time interval applies when you want to summarize activity over time. It is used when you specify a SUMMARY Report Form which has one or both sort fields STARTIMS or STARTCON included. When reporting, IMS PA accumulates the data for each interval in the report period and writes a report line for each. Specify a value in the range 00:00:01 (1 second) to 24:00:00 (24 hours). A time interval under an hour must fit evenly into the hour. IMS PA will round it down to the nearest interval that aligns to the hour. For example, 1.35 is reduced to 00:01:30 minutes which will produce 40 interval report lines for each hour of data. A time interval over an hour must fit evenly into the day. IMS PA will round it down to the nearest interval that aligns to the day. For example, 10.30.23 is reduced to 08:00:00 hours which will produce 3 interval report lines for each day of data. Minutes take precedence for an abbreviated entry. For example: 1 becomes 00:01:00 1.1 becomes 00:01:00 (rounded down from 00:01:01) 1.1.1 becomes 01:00:00 (rounded down from 01:01:01).

Totals Level

Default: `0`

Specify the grand total and subtotal levels required for reporting as follows:

Blank No totals.

0 Grand totals only, no subtotals.

1–7 Grand total and subtotals to the corresponding key level.

Precision

Default: 6

The precision of numeric fields. Numeric fields can be formatted to either 3, 4, 5, or 6 decimal places.

For example, if the field value is 10.123456 seconds:
- 3 decimal places is 10.123 precision
- 4 decimal places is 10.1235 precision
- 5 decimal places is 10.12346 precision
- 6 decimal places is 10.123456 precision

Note: Rounding occurs for elapsed and CPU time values.

Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

Digit Group.

Default: SEC

Digit Grouping affects the formatting of time and count fields. Specify the digit grouping as follows:

YES Digit grouping will include the separator character to delineate each group of three digits, aligned to milliseconds for time and 1000 for count. For time fields, the separator is **.** (period). For count fields, the separator is **,** (comma).

NO No digit grouping.

SEC The separator character will delineate the decimal point only. SEC applies to time fields only and assumes YES for count fields. Use SEC for extracts when time fields must be in seconds and fractions of seconds when importing data into a spreadsheet or database.

Report Width

Report Forms allow you to request reports wider than the standard 132 character page width. The width of the report depends on the fields requested in the Form. The default format of the report is no more than 132 characters wide, but the report width is impacted by changes to the Report Form, Precision, or Digit Grouping. The Report Form defines the fields in the report. Precision and Digit Grouping affect how the field values are represented in the report. Precision and Digit Grouping can be specified in the Report Form and the Report Set. The Report Set takes precedence.

An indicator shows whether the options you select in the Report Set make the report width different from the Report Form width. The **<** symbol indicates that the report width is less than the Report Form width as calculated at **EOR**. The **>** symbol indicates that the report width is greater than the Report Form width as calculated at **EOR**.

Note that you can view reports in full using SDSF, but when you print wide reports, data that exceeds the maximum printer page width will be truncated.

For an extract, report width is not an issue and is not displayed.

Selection Criteria

Default: None specified; include all records.

Records can be included in or excluded from all the Form-based Message Queue Summary reports based on their Transaction Code, User ID, IMS Subsystem ID, and Program name. This enables you to report only the information of interest. You can specify a single value, a masking pattern, or an Object List. See Chapter 10, "Object Lists," on page 147 for information on how to define Object Lists.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

```
                    TRFDFLT - Message Queue Summary                More: < >
Command ===> ____________________________________________________________________

Specify required view:                  ----- Report Interval ------
2  1. Report                                 YYYY/MM/DD  HH:MM:SS:TH
   2. Extract                           From __________  ___________
                                        To   __________  ___________

Extract Data Sets:

    Type     Form +    Extract Data Set Name                           Disp
 1. REPORT_  ________  ______________________________________________  ___
 2. EXTRACT  ________  ______________________________________________  ___
 3. _______  ________  ______________________________________________  ___
 4. _______  ________  ______________________________________________  ___
 5. _______  ________  ______________________________________________  ___

Extract Options:
/  Include Delimiter                   Delimiter . . , (blank is valid)
/  Include Field Labels
_  Numeric Fields in Float Format
```

Figure 304. TRF Form-based Message Queue Summary (View 2 of 2): Extract options

The additional options for the Form-based Summary extract are the same as for the Form-based List extract. See Figure 302 on page 642.

SUMMARY: Message Queue Summary report or extract

The SUMMARY operand of the IMSPATRF batch command requests the Message Queue Summary report or extract.

Format

```
IMSPATRF    SUMMARY(
           [DDNAME(ddname),]         default SUMMnnnn
           [FROM(date,time),]
           [TO(date,time),]
           [INTERVAL(hh:mm:ss),]     default 00:01:00
           [EXTRACT(ddname),]        default SUMXnnnn
           [PRECISION(n),]           default 6
           [GROUP|NOGROUP|SECGROUP,]
           [TOTALS(n)|NOTOTALS,]     default 0
           [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
           [INCL(USERID(list))|EXCL(USERID(list)),]
           [INCL(IMSID(list))|EXCL(IMSID(list)),]
           [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
           [DELIMIT(field-delimiter)|NODELIMIT,]     default , (comma)
           [LABELS|NOLABELS,]
           [FLOAT|NOFLOAT,]
            FIELDS(field1[(options)],...))
IMSPATRF    EXECUTE
```

The level of summarization can be varied depending on the number of key fields. You can specify up to 8 key fields to summarize and sort by, and you can request up to 7 levels of subtotaling.

For the field names, descriptions, and column headings, see the Chapter 41, “Glossary of Report Form field names,” on page 777.

TRF Trace reports

The Trace reports provide detailed analyses of OMEGAMON TRF Extractor output records. These reports provide detailed information about every event in the life of a transaction.

TRF Record Trace report

The OMEGAMON TRF Trace report provides a list of transactions, each with detailed information about every event in the life of that transaction. At a glance, you can see when a transaction starts, followed by all the events associated with the transaction in the order they occurred.

To specify the report options, select the Trace Reports Record Trace in the TRF Report Set.

```
                          TRFDFLT - Record Trace
Command ===> ____________________________________________________________

Specify report options.

                                       Report Output DDname  TRACE___

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
 Record Codes           ___    ________   _
```

Figure 305. TRF Record Trace report options

The options are as follows:

Report Output DDname
Default: TRACE

Specify the DDname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Selection Criteria
Default: None specified; include all records.

Selection Criteria can be specified to filter the input data on one or more of the following:
- Transaction Code
- User ID
- IMS Subsystem ID
- Program
- Record Codes

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**). Select **List** with a / to identify it as an Object List not a value.

See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

TRACE: TRF Record Trace report

The TRACE operand of the IMSPATRF batch command requests the TRF Record Trace report.

Format

```
IMSPATRF     TRACE(
            [DDNAME(ddname),]           default TRACE
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list)),]
            [INCL(PROGRAM(list))|EXCL(PROGRAM(list)),]
            [INCL(CODE(list))|EXCL(CODE(list))])
IMSPATRF     EXECUTE
```

Chapter 27. OMEGAMON TRF batch interface

The IMS PA dialog generates the JCL and commands for executing your report requests in batch. The JCL and commands for TRF report requests are described here.

Related concepts:

"TRF Report Set" on page 628
IMS PA reports for the OMEGAMON Transaction Reporting Facility (TRF) are specified in a Report Set of type TRF.

TRF Report Set JCL

The JCL built by IMS PA for the batch execution of a Report Set via the SUBMIT or JCL (or RUN) commands is similar to the sample library member IPILOGJC for a Log Report Set.

IMS PA builds the JCL to execute the program IPIMAIN using the following options specified using the dialog:

JOB **Job Statement Information** in IMS PA Settings.

IPI EXEC IPIMAIN,PARM='*parameter list***'**
IMS PA main program with parameters:

UPPER if **Reports in Upper Case** is YES in IMS PA Settings.

STEPLIB DD
IMS PA Load Library In IMS PA Settings.

TAPEDD DD
For TRF input, this DD statement is generated when two or more tape (or cartridge) input data sets are specified. TAPEDD is only used to establish unit affinity for the tape files in the JCL, and is not used by IMS PA batch processing.

TRFIN DD
TRF Extractor Data Set Name (DSN) From System Definitions. The TRF files specified for the IMS Subsystem.

IPIRSET DD
For *DSN*(*member*) where:
DSN **Report Sets Data Set** in your IMS PA Profile.
member
Name of the **Report Set** being run.

IPIOBJL DD
Object Lists Data Set in your IMS PA Profile.

IPIDIST DD
Distributions Data Set in your IMS PA Profile.

IPIFORM DD
Report Forms Data Set in your IMS PA Profile.

IPIOPTS DD *
Report Interval specified on the Run Report Set panel at run time. The format of the statement is:

IMSPATRF START(*yyyy/mm/dd*,*hh*:*mm*:*ss*:*th*),STOP(*yyyy/mm/dd*,*hh*:*mm*:*ss*:*th*)

Sample JCL with Report Set input

```
//IMSPA JOB (ACCOUNT),'NAME'
//*
//IPI     EXEC PGM=IPIMAIN
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Monitor Input data set
//TRFIN    DD  DSN=IMS.V151.OMEGTRFX,DISP=SHR
//*  IMS PA Messages
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  Report Set
//IPIRSET  DD  DSN=PREFIX.IMSPA.RSET(TRFDFLT),DISP=SHR
//*  Object Lists
//IPIOBJL  DD  DSN=PREFIX.IMSPA.OBJL,DISP=SHR
//*  Distributions
//IPIDIST  DD  DSN=PREFIX.IMSPA.DIST,DISP=SHR
//*  Report Forms
//IPIFORM  DD  DSN=PREFIX.IMSPA.FORM,DISP=SHR
//*  Reporting Time Range
//IPIOPTS  DD  *
 IMSPATRF START(2014/01/13,12:15:00:00),STOP(2014/01/13,18:30:00:00)
```

Figure 306. JCL: TRF Report Set

Sample JCL with command input

To generate JCL that contains commands in-stream, rather than referring to data sets, enter the dialog command JCLCMD, or its abbreviation, JCM; or, equivalently, enter RUN, and then specify the execution mode **Edit JCL with command input**.

By contrast, to generate JCL that builds commands at runtime from data sets, rather than containing commands in-stream, enter the dialog command JCL (or a RUN command that does not specify **Edit JCL with command input**). For details, see "TRF Report Set" on page 628.

The JCL generated by the JCLCMD command differs in the following ways from the JCL generated by the JCL command:

- The `IPICMD` DD statement contains the series of user-modifiable commands built from the activated reports in the Report Set. A description of the Report Set appears as comments (`*` in column 1) preceding the commands. It replaces the `IPIRSET` DD statement.
- The command input stream contains INCL/EXCL command parameters built from the Object Lists used by the Report Set. They replace the `IPIOBJL` DD statement.
- The command input stream contains FIELDS command parameters built from the Report Forms used by the Form-based reports and extracts. They replace the `IPIFORM` DD statement.
- The IMSPATRF command identifies OMEGAMON TRF reports.

This facility allows you to build report JCL with command input once and store it into an external library for submitting at any time, independent of the original Report Set. Individual report options, such as Date/Time report intervals or object selection filters (such as Transaction Code, Program, Database) can then be modified in the JCL and submitted without making changes to the original Report Set.

Sample JCL with command input: TRF Report Set

```
//IMSPA JOB (ACCOUNT),'NAME'
//*
//* IMS PA Report Set TRFDFLT - OMEGAMON TRF basics
//*
//IPI      EXEC PGM=IPIMAIN
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  Input Data Sets
//TRFIN    DD  DSN=IMS.V151.OMEGTRFX,DISP=SHR
//*  Report Time Range
//IPIOPTS  DD  *
 IMSPATRF START(-1,),STOP(0,)
/*
//*  Sysout data set
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
//*  Report Set Command Input
//IPICMD   DD  *
* IMS PA OMEGAMON TRF Report
* Report Set Name - TRFDFLT
* Description - OMEGAMON TRF basics
* TRF Report Global Options
*   Print Lines per Page - 60
          IMSPATRF     PAGESIZE(60)
* IMS Database Activity Report
*   List
*   List Output File - DLICALL
*   Transaction Code Include List:
*     ROBUST
          IMSPATRF     DLICALL(
                       LIST,
                       DDNAME(DLICALL),
                       INCL(TRANCODE(ROBUST)))
* DB2 Database Activity Report
*   List
*   List Output File - DB2CALL
*   DB2 Subsystem ID Include List:
*     DB2I
          IMSPATRF     DB2CALL(
                       LIST,
                       DDNAME(DB2CALL),
                       INCL(ESSID(DB2I)))
* IMS Database Activity Report
*   Summary
*   Ordering by 1 - TRANCODE
*   Report Output File - DLISUMM1
          IMSPATRF     DLICALL(
                       SUMMARY,
                       BY(
                       TRANCODE),
                       DDNAME(DLISUMM1))
* DB2 Database Activity Report
*   Summary
*   Ordering by 1 - TRANCODE
*   Report Output File - DB2SUMM1
          IMSPATRF     DB2CALL(
                       SUMMARY,
                       BY(
                       TRANCODE),
                       DDNAME(DB2SUMM1))
```

Figure 307. JCL with command input: TRF reports (1 of 2)

```
* Form-based Transit List Report
*   Report Form - default
*   Report Output File - LIST0001
*   Beginning Time - 2014/12/12
*   No Digit Grouping
*   Precision - 3
          IMSPATRF     LIST(
                       DDNAME(LIST0001),
                       FROM(2013/12/25,),
                       NOGROUP,
                       PRECISION(3),
                       FIELDS(LTERM,
                              TRANCODE,
                              PROGRAM,
                              PSTID,
                              CLASS,
                              STARTIMS(TIME),
                              CPUTIME,
                              USERID,
                              INPUTQ,
                              PROCESS,
                              OUTPUTQ,
                              TOTALTM,
                              RESPIMS,
                              RECTOKEN))
* Form-based Transit Summary Report
*   Report Form - default
*   Report Output File - SUMM0001
*   No Digit Grouping
*   Totals Level - 0
*   Time Interval (hh:mm:ss) - 00:01:00
*   Precision - 3
          IMSPATRF     SUMMARY(
                       DDNAME(SUMM0001),
                       NOGROUP,
                       TOTALS(0),
                       INTERVAL(00:01:00),
                       PRECISION(3),
                       FIELDS(TRANCODE(ASCEND),
                              TRANCNT,
                              INPUTQ(AVE),
                              PROCESS(AVE),
                              OUTPUTQ(AVE),
                              TOTALTM(AVE),
                              INPUTQ(90),
                              PROCESS(90),
                              OUTPUTQ(90),
                              TOTALTM(90),
                              CPUTIME(AVE)))
* Trace Report
*   Report Output File - TRACE
          IMSPATRF     TRACE(
                       DDNAME(TRACE))
          IMSPATRF     EXECUTE
/*
```

Figure 308. JCL with command input: TRF reports (2 of 2)

IMSPATRF **command and report operands**

The IMSPATRF command requests OMEGAMON TRF reports and extracts. Any number of TRF reports can be requested in the one batch job.

Format

```
IMSPATRF     operands
```

The last command in the batch job must be `IMSPATRF EXECUTE` to inform IMS PA that all TRF reports have been requested and processing of TRF input can commence.

The IMSPATRF report operands are:

DLICALL(LIST)
: DLI Call List

DLICALL(SUMMARY)
: DLI Call Summary

DB2CALL(LIST)
: DB2 Call List

DB2CALL(SUMMARY)
: DB2 Call Summary

LIST(...,FIELDS(...))
: Message Queue List (Form-based)

SUMMARY(...,FIELDS(...))
: Message Queue Summary (Form-based)

TRACE Record Trace

For further about the report operands, their meaning, and default values, refer to the description of the corresponding dialog options in Chapter 26, “Requesting OMEGAMON TRF reports,” on page 627.

Part 9. OMEGAMON ATF reporting

This part describes how to request and run OMEGAMON ATF reports using the dialog and batch commands.

Chapter 28. Requesting OMEGAMON ATF reports

IMS Performance Analyzer (IMS PA) complements IBM Tivoli OMEGAMON XE for IMS on z/OS Version 4.2 or later by reporting transaction and application-level accounting statistics written to a VSAM KSDS journal by the Application Trace Facility (ATF).

OMEGAMON ATF data

OMEGAMON Application Tracing Facility (ATF) complements the summary-level transaction data collected by the Transaction Reporting Facility (TRF).

OMEGAMON ATF provides the following data:

- Application-level detailed monitoring:
  - DLI calls, including SSA, KFBA, and IO area.
  - DB2 calls.
- DLI call times and CPU utilization (in each IMS region).

See Chapter 36, "OMEGAMON ATF records," on page 739 for the list of ATF record codes.

The analysis of the data collected by ATF can be used to:

- Identify transaction response-time components.
- Fine-tune applications.
- Understand how application programs operate.

When monitoring, OMEGAMON ATF writes near-term history records to active journals. For IMS Performance Analyzer reporting, it is recommended to use the journals when ATF is offline (and not actively recording) or copy the journals to offline data sets before reporting.

ATF journals for an IMS subsystem

To associate OMEGAMON ATF journal data sets with an IMS subsystem, use View 6 of the IMS Subsystem panel. This data is used by the IMS PA dialog in the generation of JCL to run ATF Report Sets.

```
  File  Edit  Options  Help
──────────────────────────────────────────────────────────────────────────────
                              System Definitions          Row 1 of 1 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

Select to specify input files.                    Auto_File
                         -------- Files -------   Selection
/ System   Type     VRM  Log  Mon  CEX  TRF  ATF  DBRC  CEX
S IZDX     IMS      151  Yes  No        Yes  Yes  Yes
******************************* Bottom of data ********************************
```

Specify the data set names of the OMEGAMON ATF journal files in a similar way to IMS Connect journal files.

The data sets must be cataloged. For a description of the fields, available line actions, and action bar choices, see “Journal Files for a Connect System” on page 182.

```
  File  Edit  Options  Help
-------------------------------------------------------------------------------
                                IMS Subsystem             Row 1 of 1 More: < >
Command ===> ____________________________________________ Scroll ===> PAGE

IMS Subsystem definition:
 IMS Subsystem ID  . . . . IZDX  IMS Version (VRM) . . . 151  +
 Description . . . . . . . System with ATF tracing
 RESLIB Data Set . . . . . IMS.V1510.SDFSRESL
-------------------------------------------------------------------------------
Specify required view . . 6  1. DBRC Settings    4. Groups
                             2. Log Files        5. OMEGAMON TRF Files
                             3. Monitor Files    6. OMEGAMON ATF Journals
-------------------------------------------------------------------------------
Specify the Log Files (in time sequence) for this subsystem:

/  Exc               Data Set Name (DSN)                UNIT +  SEQ VOLSER +
_    *  'IZDX.OMEGATF.JOURNAL1'                          _______ ___ ______
 ****************************** Bottom of data ********************************
```

Note:

- ATF journals are not involved in automated file selection.
- ATF journals can contain data from multiple systems in an IMSPLEX. The system name in the System Definition is not used for JCL generation.

ATF Report Set

ATF reports are specified in a Report Set of type ATF.

To specify ATF report requests:

1. Select option 3 **Report Sets** from the IMS PA Primary Option Menu. A list of the Report Sets in the nominated Report Sets data set is displayed.
2. Define a new ATF Report Set or edit an existing one using line action **S**. See “Maintaining Report Sets” on page 125 for information on how to do this.

```
  File  View  Options  Help
-------------------------------------------------------------------------------
                                Report Sets                Row 1 to 4 of 4
Command ===> NEW ATFRSET ATF                               Scroll ===> PAGE

Report Sets Data Set . . . : IMSPA.RSET

/     Name    Type           Description               Changed        ID
___  BASICCOM CEX  Combined basic - List & Summary  2014/07/25 13:02 AJL
___  DFLTCEX  CEX  IMS Connect daily                2014/07/15 10:48 AJL
___  DFLTLOG  LOG  IMS Log weekly                   2014/07/17 12:02 AJL
___  TRFDFLT  TRF  OMEGAMON TRF reports             2014/07/02 14:22 AJL
****************************** Bottom of data ********************************
```

Figure 309. Defining a new ATF Report Set

Enter NEW on the command line to display a window which prompts you to specify the name and type of Report Set or model on an existing one.

You can bypass the prompt window if you specify the report set type ATF in the command as shown in the previous figure, or if you specify a model in the command. For example:

```
NEW ATFDAILY MODEL ATFWEEK
```

or

A panel is then displayed for you to edit the description of the Report Set and specify your report requests.

```
  File  View  SysDefs  Options  Help
------------------------------------------------------------------------------
EDIT                      Report Set - ATFRSET                    Line 1 of 9
Command ===> ____________________________________________ Scroll ===> PAGE

Description . . . OMEGAMON ATF starter set_______

Enter "/" to select action.

___           ** Reports **                          Active
     -  ___   Options                                  No
              ___  ATF Global                         No
     -  ___   Transaction Transit Reports             No
              S__  List                               No
              ___  Summary                            No
     -  ___   Trace Reports                           No
              ___  Record Trace                       No
     -  ___   Extracts                                No
              ___  Exception Transaction              No
              ** End of Reports **
```

Figure 310. Edit ATF Report Set

The ATF Report Set provides three reports and an extract, with global options that apply to most or all of them:

1. List report – lists all transaction event data in chronological sequence.
2. Summary report – statistical analysis of transaction activity.
3. Trace report – with three levels of detail for application-level analysis of DLI and external subsystem (DB2 SQL and MQ adapter) calls.
4. Exception transaction extract – to extract exception records from the online OMEGAMON ATF journals, based on two criteria, ABEND and long response time.

The operation of the ATF Report Set edit panel, such as the commands, line actions, action bar, and PF keys, is similar to that for the other types of Report Set. For example, see Chapter 22, “Requesting Monitor reports,” on page 491.

Related concepts:

“Report command format” on page 41
IMS PA provides both a dialog and batch interface. The IMS PA commands are used to request reports and extracts. The dialog generates the JCL and commands when you run (submit) a Report Set.

Related reference:

Chapter 29, “OMEGAMON ATF batch interface,” on page 673
The IMS PA dialog generates the JCL and commands for running your report requests in batch. The JCL and commands for ATF report requests are described here.

ATF Global Options

The IMS PA ATF Global Options define general control information that applies to more than one report within the ATF Report Set.

IMS PA automatically activates the ATF Global Options if at least one report in the Report Set is active. Conversely, the ATF Global Options are deactivated if no reports are active. You cannot activate or deactivate the ATF Global Options yourself.

To view and edit ATF Global Options for a Report Set:
1. Select the ATF Report Set.
2. Expand the **Options** category using line action S.
3. Select the **ATF Global** category using line action S.

```
  File  Options  Help
------------------------------------------------------------------------------
                       ATFRSET - ATF Global Options
Command ===> _________________________________________________________________

Specify ATF Global options.

Report Options:
Print Lines per Page . . 60   (1-255)

Exception criteria for transactions:
_  Abended
_  Exceeded elapsed time threshold... 1.00  seconds (0.01 to 9999)

Run-time Options:
_  Activate inflight processing
   Inflight DSN  . . . __________________________________________________
   Outflight DSN . . . __________________________________________________
   _  Print the discarded transactions report
```

Figure 311. ATF Global Options

The ATF global options are:

Print Lines per Page
Default: 60

Specify the number of print lines per page. The specified value applies to all reports in the ATF Report Set.

Valid values are from 1 to 255.

This option generates the PAGESIZE(*nnn*) global operand.

Exception criteria for transactions
Default: None selected; no filtering on exception criteria.

Select one or both of the exception criteria to filter the ATF data to be processed. If both are selected, transactions that satisfy either or both criteria are processed. The criteria apply to all reports in the Report Set. At least one must be specified to request an Exception Transaction Extract.

Abended
Default: Not selected; all transactions are processed.

Select with a / to limit exception processing to those transactions that abended.

This option generates the ABEND global operand.

Exceeded elapsed time threshold *nnnn*
Default: Not selected; all transactions are processed.

Select with a / to limit exception processing to those transactions with an elapsed time that exceeds the specified elapsed time threshold.

Specify a threshold in the range 0.01 to 9999 seconds. Default: 1.00 second.

This option generates the ELAPSE(*s.th*) or ELAPSE(*ssss*) global operand.

Activate inflight processing
Default: Not selected; Inflight processing is not activated.

Select with a / to ensure that all transactions are reported with complete details across journal switches.

OMEGAMON ATF cuts event records to its active journal. At journal switch time, some transactions may be in the middle of processing and incomplete. Without inflight processing activated, reporting against the archive journal will result in these incomplete transactions being lost or reported with incomplete details.

Inflight processing requires both an input and output data set, either consecutive generations of a generation data group (GDG), or two explicitly-named data sets:

Inflight DSN
The name of the input data set that contains incomplete transactions from the previous run. The inflight data set is read at the start of report processing. Incomplete transactions will resume and presumably complete within the current journal.

The inflight data set name is specified in the JCL in the ATFINFLT DD statement.

Outflight DSN
The name of the output data set that is to contain incomplete transactions from the current run. The outflight data set is written at the end of report processing and automatically becomes the inflight data set for the next run.

The outflight data set name is specified in the JCL in the ATFOTFLT DD statement.

Print the discarded transactions report
Select this option to produce a report of incomplete transactions in the inflight data set that have no activity in the current journal and are not written to the outflight data set. This option generates the DISCARDS global operand. The discarded transaction report output is assigned to the DISCARDS DD statement.

For more information about allocating and using inflight data sets, see "ATF inflight data sets" on page 675.

Tip: Once you commence running the Report Set with inflight processing activated, you should not change the selection of reports. If you wish to run a different set of reports, define them in a new Report Set with a different pair of inflight and outflight data sets.

ATF Transaction Transit reports

The OMEGAMON ATF Transaction Transit reports are List and Summary.

ATF Transit List report

The OMEGAMON ATF Transit List report provides a list of transactions with their processing and CPU times.

To specify the report options, select the Transaction Transit List report in the ATF Report Set.

```
  File  Options  Help
──────────────────────────────────────────────────────────────────────────────
                          ATFRSET - List
Command ===> ____________________________________________________________

Specify report options.

                                      ──── Report Interval ─────
                                           YYYY/MM/DD  HH:MM:SS:TH
                                      From ___________  ___________
                                      To   ___________  ___________

                                      Report Output DDname  LIST0001

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
```

Figure 312. ATF Transit List report options

The options are as follows:

Report Interval
Default: Not specified.

Specify the reporting interval. Records with time stamps on or after the **From** Date/Time and to the **To** Date/Time are included in the report.

You can specify one of the following:
- Date/time pairs or dates only. This indicates a *date-time range* (for example, 2014/06/25 7:00 to 2014/06/25 16:30). The **From** Date/Time must be before the **To** Date/Time.
- Times only. This indicates a particular *time slot* (for example, 9:00 to 10:00 each day). Specifying the **From** Time greater than the **To** Time indicates a time slot across midnight.
- Neither date/time pair. *All* input records are selected.

Report Output DDname
Default: `LIST0001`

Specify the DDname to be used for the report output.

This option generates the DDNAME(*ddname*) operand.

Selection Criteria

Default: None specified; include all records.

Selection Criteria can be specified to filter the input data on one or more of the following:

- Transaction Code
- User ID
- IMS Subsystem ID
- Program

Specify field values to be included in or excluded from the report. Specify a single value, a masking pattern, or an Object List.

You can enter the name of the Object List directly, or to select from a list of available Object Lists, position the cursor in the field and press **Prompt** (**F4**). Select **List** with a / to identify it as an Object List not a value.

See Chapter 10, "Object Lists," on page 147 for information on how to define an Object List.

This option generates the INCL|EXCL(*field*(*values*)) report operand.

LIST: ATF Transit List report

The LIST operand of the IMSPAATF batch command requests the ATF Transit List report.

Format

```
IMSPAATF     LIST(
            [DDNAME(ddname),]           default LIST0001
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list)),]
            [INCL(PROGRAM(list))|EXCL(PROGRAM(list))])
IMSPAATF     EXECUTE
```

ATF Transit Summary report

The OMEGAMON ATF Transit Summary report provides a statistical summary of transaction performance with average and maximum processing and CPU times.

To specify the report options, select the Transaction Transit Summary report in the ATF Report Set.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────
                          ATFRSET - Summary
Command ===> ____________________________________________________________

Specify report options.

Report Options:                          ──── Report Interval ─────
 Totals Level  0                              YYYY/MM/DD  HH:MM:SS:TH
                                         From __________  ___________
                                         To   __________  ___________

                                         Report Output DDname  SUMM0001

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
```

Figure 313. ATF Transit Summary report options

The options are as follows:

Totals Level
Default: `0` (grand total only)

Specify the summarization level:

- `0` for grand total, no subtotals. This generates the `TOTALS(0)` operand.
- Blank for no totals. This generates the `NOTOTALS` operand.

Report Interval
As for "ATF Transit List report" on page 664.

Report Output DDname
Default: `SUMM0001`

Specify the DDname to be used for the report output.

This option generates the `DDNAME(`*ddname*`)` operand.

Selection Criteria
As for "ATF Transit List report" on page 664.

SUMMARY: DLI Call Summary report

The SUMMARY operand of the IMSPAATF batch command requests the DLI Call Summary report.

Format

```
IMSPAATF     SUMMARY(
            [TOTALS(n)|NOTOTALS,]       default TOTALS(0)
            [DDNAME(ddname),]           default SUMM0001
            [FROM(date,time),]
            [TO(date,time),]
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list)),]
            [INCL(PROGRAM(list))|EXCL(PROGRAM(list))])
IMSPAATF     EXECUTE
```

ATF Trace reports

The OMEGAMON ATF Trace reports provide detailed application DLI, DB2, and IBM MQ call analysis for selected transactions.

ATF Record Trace report

There are three levels of trace that provide increasing level of detail: (1) Trace Overview, (2) Trace Detail, and (3) Trace Detail (Expanded).

To specify the report options, select the Trace Reports Record Trace in the ATF Report Set.

```
                          ATFRSET - Record Trace
Command ===> ____________________________________________________________

Specify report options.

Reports Required:                       Report Output DDnames:
/  Trace Overview                       TRACE001
_  Trace Detail                         TRACE002
_  Trace Detail (Expanded)              TRACE003

Report Options:
_  Include Monitor events

Selection Criteria:
    Object Type       Inc/Exc  Object +  List    Validation Warning
 Transaction Code       ___    ________   _
 User ID                ___    ________   _
 IMS Subsystem ID       ___    ________   _
 Program                ___    ________   _
```

Figure 314. OMEGAMON ATF Record Trace report options

The options are as follows:

Reports Required

Select one or more of the following trace reports:

Trace Overview (level 1)
This report lists summary statistics for each transaction, including a breakdown by event type. Details for each event type include event type and subtype, for example, DLI CALL (DB); GHU or DB2 SQL; FETCH and Total, Average and Maximum elapsed times.

Trace Overview (level 1) is the default option.

This option generates the `LEVEL(1)` batch operand.

Trace Detail (level 2)
This report lists statistics for each event within a transaction. This includes a time stamp, call duration, call verb and return code.

This option generates the `LEVEL(2)` batch operand.

Trace Detail (Expanded) (level 3)
This report lists statistics for each event within a transaction. In addition, for each DLI and DB2 call, detailed information captured by ATF is provided. For DLI calls, this includes key feedback, I/O area and unqualified SSA. For DB2 calls this includes statement number and program name.

This option generates the LEVEL(3) batch operand.

Report Output DDnames

For each report, specify a unique DDname to separate the output of multiple reports. A DDname is 1–8 alphanumeric characters starting with an alphabetic character.

The default DDnames provided are TRACE001, TRACE002, and TRACE003 for level 1, 2, and 3 respectively.

This option generates the DDNAME(*ddname*) batch operand.

Include Monitor events

Select this option to include Monitor events and additional transaction identification and performance characteristics in the trace level 2 and 3 detailed reports. This option is not applicable to the trace level 1 overview report.

By default, the Monitor option is not selected.

This option generates the MONITOR batch operand.

Selection Criteria

As for ATF "ATF Transit List report" on page 664.

TRACE: ATF Record Trace report

The TRACE operand of the IMSPAATF batch command requests the ATF Record Trace report.

Format

```
IMSPAATF     TRACE(
            [LEVEL(1|2|3),]             default 1
            [MONITOR,]
            [DDNAME(ddname),]           default TRACE001
            [INCL(TRANCODE(list))|EXCL(TRANCODE(list)),]
            [INCL(USERID(list))|EXCL(USERID(list)),]
            [INCL(IMSID(list))|EXCL(IMSID(list)),]
            [INCL(PROGRAM(list))|EXCL(PROGRAM(list))])
IMSPAATF     EXECUTE
```

ATF Extracts

The Exception Transaction Extract file contains exception records extracted from the OMEGAMON ATF journals based on two criteria, ABEND and long response time.

IMS PA extracts all the records (such as DLI, DB2, MQ) associated with an exception transaction, even though the exception is not determined until the final summary record is read. It does this by queuing records based on their IMS recovery token.

ATF Exception Transaction extract

The Exception Transaction Extract is an ATF data reduction process. It creates a new ATF journal data set that contains only those records associated with transactions that generated an exception.

Select **Exception Transaction** Extract in the ATF Report Set.

```
  File  Options  Help
 ──────────────────────────────────────────────────────────────────────────────
                  ATFRSET - Exception Transaction Extract
Command ===> ____________________________________________________________________

Specify the extract options:

Extracts required:
_  ATF Journal (KSDS)
_  REPRO file

Extract data set names:
ATF Journal: 'IMSP.ATF.JOURNAL.EXCEPT'
REPRO file : 'IMSP.ATF.JOURNAL.REPRO(+1)'                  Disp: NEW

Exception criteria for transactions (Global options):
/  Abended
   Exceeded elapsed time threshold...  1.00  seconds
```

Figure 315. ATF Exception Transaction extract options

The extract options are as follows:

Extracts required
Default: None.

You can extract to two types of data set. Select either or both:

- **ATF Journal**. A pre-allocated KSDS with the same attributes as a normal ATF journal.

  This option generates the JOURNAL operand.

  Advantage: IMS PA and IMS PI can report against the data set without any functional change.
- **REPRO file**. A sequential data set.

  This option generates the REPRO operand.

  Advantage: This is suitable for longer-term archival (using a generation data group (GDG)). Then when required, you can IDCAMS REPRO the file into an empty ATF Journal for reporting.

Extract data set names
Default: None.

When specifying the data set name, standard TSO conventions apply. For example, if the TSO option PROFILE PREFIX is in effect, the prefix will be appended as the high-level qualifier unless the data set name is enclosed in quotes.

- **ATF Journal**. If you request this extract, specify the name of the VSAM KSDS to be used for the exception extract records. This data set must be pre-allocated using the same attributes as a normal ATF journal.

  The JCL assigns DDname ATFOUT1 to the Journal extract data set.
- **REPRO file**. If you request this extract, specify the name of the data set to which the exception extract records are to be written. If IMS PA is to create the data set at run time, the default allocation attributes specified for **Summary Extracts** in Reporting Allocation Settings will be used when generating the JCL. If the data set is already cataloged, then IMS PA will use DISP=OLD or DISP=MOD according to your request to overwrite

or append to the existing data set. Alternatively, you can use a GDG to create a new data set each time the extract is run.

The JCL assigns DDname ATFOUT2 to the REPRO extract data set.

Disp Default: Not specified

This option applies if the extract data set you specified is already cataloged. Specify a disposition of OLD or SHR to overwrite the data set contents with the new extract data or MOD to append the new extract data. If the data set is not cataloged then DISP=NEW will be used regardless of this setting.

Exception criteria for transactions

The exception criteria are displayed here for reference purposes, and to prompt you to set them in ATF Global Options. See **Exception criteria for transactions** in Figure 311 on page 662.

Exception records are extracted from the ATF journals based on two criteria, ABEND or long response time, or both:

Abended

If selected with a /, the extract includes transactions that abended.

This option generates the ABEND global operand.

Exceeded elapsed time threshold... *nnnn*

If selected with a /, the extract includes transactions that exceed the specified elapsed time threshold.

The threshold is in the range 0.01 to 9999 seconds. Default: 1.00 second.

This option generates the ELAPSE(*s.th*) or ELAPSE(*ssss*) global operand.

EXTRACT: Exception Transaction extract

The EXTRACT operand of the IMSPAATF batch command requests the Exception Transaction extract.

Format

```
 IMSPAATF   [ABEND,]
            [ELAPSE(ssss)]    default 1.00 second
 IMSPAATF    EXTRACT(
            [JOURNAL,]        DDname ATFOUT1
            [REPRO])          DDname ATFOUT2
*                             DDname ATFRECAP for Recap report
 IMSPAATF    EXECUTE
```

Note:

1. Reports can be run during the extract process, and they will honor the exception criteria ABEND and ELAPSE(*ssss*).
2. If no exception criteria are specified, an error message is issued and the extract does not proceed.
3. A recap report is written to ATFRECAP DD showing how many exceptions occurred.

Recoverability

In the event of an IMS PA extract failure, the job can be restarted.

ATF Journal
When the extract file is a KSDS ATF journal, IMS PA will detect when records have already been written and continue.

REPRO file
When the extract file is a sequential data set, IMS PA will open the file and write each record, either at the end of the data set (DISP=MOD) or from the beginning (DISP=NEW or OLD). When restarting an extract with DISP=MOD, duplicate records may be written. However, REPRO can support this by ignoring duplicate record keys (specify NOREPLACE option) . Prior to restarting an extract to a generation data group (GDG), first delete the most recent generation that failed to compete successfully.

Predefining the ATF extract journal

If you are extracting to an ATF journal KSDS data set, then you must first define it using IDCAMS. Ensure that you make the data set large enough for your needs by specifying the appropriate size (CYLINDERS) and volumes to extend to (VOLUMES).

Note that while standard OMEGAMON ATF journals must only have a single extent, this is not a restriction for IMS PA ATF extract journals. They can utilize the entire 123 extent limit of VSAM.

```
//IMSPA JOB (ACCOUNT),'NAME'
//*
//IDCAMS   EXEC PGM=IDCAMS
//SYSPRINT DD   SYSOUT=*
//SYSIN    DD   *
 DEFINE CLUSTER(NAME(IMSP.ATF.JOURNAL.EXCEPT) -
          INDEXED  -
          CYLINDERS(<pri> <sec>)-
          SHR(3,3) -
          FREESPACE(0 0) -
          SPANNED -
          VOLUMES(<volser>) -
          DATACLASS(<dataclass>) -
        DATA(NAME(IMSP.ATF.JOURNAL.EXCEPT.DATA) -
          KEYS(10 0)-
          CISIZE(26624) -
          RECORDSIZE(27228 32756)) -
        INDEX(NAME(IMSP.ATF.JOURNAL.EXCEPT.INDEX))
/*
```

Figure 316. JCL: Predefine the ATF extract journal

Defining the data class for the ATF extract journal

To reduce the size of the ATF extract journal, you can use an extended format VSAM KSDS with compaction.

To do this, first define a data class with **Data Set Name Type** EXT and **Compaction** Y, as follows:

```
                          DATA CLASS DEFINE          Page 2 of 5
Command ===> ____________________________________________________________

SCDS Name . . . : SYS1.SCDS01
Data Class Name : VSEXTC

To DEFINE Data Class, Specify:

Data Set Name Type  . . . . . EXT  (EXT, HFS, LIB, PDS, Large, blank)
  If Ext  . . . . . . . . . . R    (P=Preferred, R=Required or blank)
  Extended Addressability . . Y    (Y or N)
  Record Access Bias  . . . . U    (S=System, U=User or blank)
Space Constraint Relief . . . N    (Y or N)
  Reduce Space Up To (%)  . . __   (0 to 99 or blank)
  Dynamic Volume Count  . . . __   (1 to 59 or blank)
  Compaction  . . . . . . . . Y    (Y, N, T, G or blank)
  Spanned / Nonspanned  . . . S    (S=Spanned, N=Nonspanned or blank)
```

Figure 317. ATF extract journal: Define data class

Reporting the ATF extract journal

The ATF Exception Extract journal can be input to IMS PA reporting in the same way as standard ATF journals.

The following example JCL demonstrates using an ATF Exception Extract journal as input to IMS PA reporting.

```
//IMSPAATF JOB (ACCOUNT),'NAME'
//*
//IPI      EXEC PGM=IPIMAIN,REGION=100M
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  ATF journals
//ATFIN001 DD DISP=SHR,DSN=IMS.ATF.JOURNAL.EXCEPT
//IPIOPTS  DD  *
* Reporting time range
 IMSPAATF START(2014/04/20,10:00:00:00),STOP(2014/04/20,11:00:00:00)
/*
//SYSPRINT DD  SYSOUT=*
//*  Report Set command input
//IPICMD   DD  *
* IMS PA OMEGAMON ATF Reports
* ATF Report Global Options
          IMSPAATF     PAGESIZE(60)
          IMSPAATF     LIST
          IMSPAATF     SUMMARY
          IMSPAATF     TRACE(LEVEL(3))
          IMSPAATF     EXECUTE
/*
```

Figure 318. JCL: Reporting the extract ATF journal

Note that IMS PA does not support reporting against the sequential REPRO extract data set.

Chapter 29. OMEGAMON ATF batch interface

The IMS PA dialog generates the JCL and commands for running your report requests in batch. The JCL and commands for ATF report requests are described here.

Related concepts:

"ATF Report Set" on page 660
ATF reports are specified in a Report Set of type ATF.

ATF Report Set JCL

IMS PA uses options that you specify in the dialog to generate JCL that runs a Report Set.

```
//IMSPAATF JOB (ACCOUNT),'NAME'
//*  IMS PA Report Set - OMEGAMON ATF Reports and Extract
//IPI     EXEC PGM=IPIMAIN
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//*  ATF Journal input data sets
//ATFIN001 DD DISP=SHR,DSN=IMS.ATF.JOURNAL1
//ATFIN002 DD DISP=SHR,DSN=IMS.ATF.JOURNAL2
//IPIOPTS  DD  *
* Reporting time range
 IMSPAATF START(2014/10/19,10:00:00:00),STOP(2014/10/19,10:05:00:00)
/*
//*  ATF Exception Extract processing
//ATFOUT1  DD  DISP=SHR,DSN=ATF.JOURNAL.EXTRACT
//ATFOUT2  DD  DSN=ATF.REPRO.EXTRACT,
//             DISP=(NEW,CATLG),
//             UNIT=SYSDA,SPACE=(CYL,(1,1),RLSE)
//ATFRECAP DD  SYSOUT=*
//*  Inflight transaction processing
//ATFINFLT DD  DISP=SHR,DSN=IPI.ATF.INFLIGHT
//ATFOTFLT DD  DISP=SHR,DSN=IPI.ATF.OTFLIGHT
//DISCARDS DD  SYSOUT=*
//*  SYSOUT data set
//SYSPRINT DD  SYSOUT=*
//SYSUDUMP DD  SYSOUT=*
```

Figure 319. JCL: ATF command input (part 1 of 2)

```
//*  Command input
//IPICMD   DD  *
* IMS PA OMEGAMON ATF Reports
* ATF Report Global Options
          IMSPAATF     PAGESIZE(60),
                       ABEND,
                       ELAPSE(1.00),
                       DISCARDS
* List Report
          IMSPAATF     LIST(
                       DDNAME(LIST0001),
                       EXCL(TRANCODE(TRANX)),
                       INCL(USERID(USRX)),
                       INCL(IMSID(IMSX)),
                       INCL(PROGRAM(PROGX)))
* Summary Report
          IMSPAATF     SUMMARY(
                       DDNAME(SUMM0001),
                       TOTALS(0))
* ATF Trace Reports
          IMSPAATF     TRACE(
                       LEVEL(1),
                       DDNAME(TRACE001))
          IMSPAATF     TRACE(
                       LEVEL(2),
                       DDNAME(TRACE002))
          IMSPAATF     TRACE(
                       LEVEL(3),
                       DDNAME(TRACE003))
* ATF Exception Extracts
*   JOURNAL - VSAM KSDS: ATFOUT1 DD
*   REPRO - Sequential data set: AFTOUT2 DD
          IMSPAATF     EXTRACT(
                       JOURNAL,
                       REPRO)
 IMSPAATF     EXECUTE
/*
//*  Switch Inflight transaction data sets
//RENAME   EXEC PGM=IDCAMS,(COND=0,NE,IPI)
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  *
  ALTER    IPI.ATF.INFLIGHT -
  NEWNAME( IPI.ATF.INFLIGHT.TMP )
  ALTER    IPI.ATF.OTFLIGHT -
  NEWNAME( IPI.ATF.INFLIGHT )
  ALTER    IPI.ATF.INFLIGHT.TMP -
  NEWNAME( IPI.ATF.OTFLIGHT )
/*
```

Figure 320. JCL: ATF command input (part 2 of 2)

ATF Report Set JCL statements are:

JOB **Job Statement Information**
In IMS PA Settings.

IPI EXEC IPIMAIN,PARM='*parameter list***'**
IMS PA main program with parameters:

UPPER if **Reports in Upper Case** is YES in IMS PA Settings.

STEPLIB DD
IMS PA Load Library
In IMS PA Settings.

ATFIN001 DD

ATF Journal Data Set Name
From System Definitions. The ATF files specified for the IMS Subsystem.

ATFINFLT DD

ATF Inflight Data Set Name
From ATF Global Options. The name of the input data set that contains incomplete transactions from the previous run. For more information, see "ATF inflight data sets."

ATFOTFLT DD

ATF Outflight Data Set Name
From ATF Global Options. The name of the output data set that is to contain any incomplete transactions from the current run. For more information, see "ATF inflight data sets."

DISCARDS DD

Print discarded transactions report
From ATF Global Options. The name of the output data set that is to contain any incomplete transactions from the current run.

IPIRSET DD

For *DSN*(*member*) where:
DSN **Report Sets Data Set** in your IMS PA Profile.
member Name of the **Report Set** being run.

IPIOBJL DD

Object Lists Data Set in your IMS PA Profile.

IPIOPTS DD *

Report Interval specified on the Run Report Set panel at run time. The format of the statement is:

```
IMSPAATF START(yyyy/mm/dd,hh:mm:ss:th),STOP(yyyy/mm/dd,hh:mm:ss:th)
```

or

```
IMSPAATF START(-9999,hh:mm:ss:th),STOP(-nnnn,hh:mm:ss:th)
```

ATF inflight data sets

OMEGAMON writes its ATF records to VSAM journals. When a journal becomes full, ATF switches to the next available journal. However, one or more transactions may be in progress and hence incomplete (inflight) when the journal is switched. In this case, the transaction's records will span multiple journals.

IMS PA will report or extract these inflight transactions with incomplete details. Important information is lost.

IMS PA ATF processing must report and extract complete transaction details wherever possible, even those that are inflight at journal end-of-file.

IMS PA ATF reporting supports an (optional) pair of inflight data sets to ensure that all transactions can be accurately and completely reported, even those that are incomplete at journal end-of-file:

- ATFINFLT data set is input into reporting, and contains incomplete transactions that were inflight at the end of the previous journal.
- ATFOTFLT data set is output from reporting, and contains incomplete transactions that are inflight at the end of the current journal.

Restrictions:

- Inflight transactions must complete or incur some activity during the processing of the next journal, otherwise they are reported as incomplete and are not recorded back to the out-flight data set again.
- ATF journals must be processed in strict chronological order, ideally as a post step to the journal archive process.

There are two options for inflight data sets. Both ensure that you will never have to change your report JCL (since ATFOTFLT needs to be the ATFINFLT for the next run):

Generation Data Set Group (GDG)
Use the following IDCAMS command to define the GDG base:

```
DEFINE GDG (NAME('IPI.ATF.INFLIGHT') NOEMPTY SCRATCH LIMIT(3))
```

Notice the GDG limit is set to 3, even though only 2 inflight data sets are required. This ensures that, in the event of a reporting failure, corrective action can be taken (delete the generation 0 data set and rerun the job).

Fixed data set names
The ATFINFLT and ATFOTFLT data sets are switched in an IDCAMS post step after reporting has completed successfully (RC=0).

Sample JCL using GDG inflight data sets

This JCL illustrates the use of inflight and outflight generation data group (GDG) data sets.

To create a GDG initially, see sample JCL in "Allocate ATF inflight data sets" on page 745.

```
//IMSPAATF JOB (ACCOUNT),'NAME'
//IPI      EXEC PGM=IPIMAIN
//STEPLIB  DD  DISP=SHR,DSN=IMSPA.V440.SIPILINK
//ATFIN001 DD  DISP=SHR,DSN=OMEGAMON.ATF.JOURNAL1
//ATFOUT1  DD  DISP=SHR,DSN=IPI.ATF.EXTRACT
//ATFRECAP DD  SYSOUT=*
//ATFINFLT DD  DSN=IPI.ATF.INFLIGHT(0),DISP=SHR
//ATFOTFLT DD  DSN=IPI.QAA.RPTA403.IFLTPGDG(+1),
//             DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//             DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)
//SYSPRINT DD  SYSOUT=*
//IPICMD   DD  *
  IMSPAATF     ABEND,
               ELAPSE(5.00),
               DISCARDS
  IMSPAATF EXTRACT(JOURNAL)
  IMSPAATF EXECUTE
/*
```

Figure 321. JCL: ATF Report Set using GDG inflight data sets

Sample JCL using fixed inflight data set names

This JCL illustrates the use of explicitly named inflight and outflight data sets.

At the end of the job, the data sets are switched in preparation for the next run. The outflight from this run is the inflight for the next .To allocate the data sets initially, see the sample JCL in "Allocate ATF inflight data sets" on page 745.

```
//IMSPAATF JOB (ACCOUNT),'NAME'
//IPI      EXEC PGM=IPIMAIN
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//ATFIN001 DD  DISP=SHR,DSN=OMEGAMON.ATF.JOURNAL1
//ATFOUT1  DD  DISP=SHR,DSN=IPI.ATF.EXTRACT
//ATFRECAP DD  SYSOUT=*
//ATFINFLT DD  DISP=SHR,DSN=IPI.ATF.INFLT
//ATFOTFLT DD  DISP=SHR,DSN=IPI.ATF.OUTFLT
//* IPI Command Input member
//IPICMD   DD  *
 IMSPAATF ABEND,
          ELAPSE(5.00),
          DISCARDS
 IMSPAATF EXTRACT(JOURNAL),EXEC
/*
//RENAME   EXEC PGM=IDCAMS,(COND=0,NE,IPI)
//SYSPRINT DD  SYSOUT=*
//SYSIN    DD  *
  RENAME   IPI.ATF.INFLT        IPI.ATF.INFLT.NEXT
  RENAME   IPI.ATF.OUTFLT       IPI.ATF.INFLT
  RENAME   IPI.ATF.INFLT.NEXT   IPI.ATF.OUTFLT
/*
```

Figure 322. JCL: ATF Report Set using fixed inflight data set names

IMSPAATF **command and report operands**

The IMSPAATF batch command requests OMEGAMON ATF reports and extracts. Any number of ATF reports can be requested in the one batch job.

Format

```
IMSPAATF     operands
```

The last command in the batch job must be IMSPAATF EXECUTE to inform IMS PA that all ATF reports have been requested and processing of ATF input can commence. For clarity, ensure that there is only one EXECUTE operand in the batch job.

If IMSPAATF EXECUTE is omitted, IMS PA performs syntax checking of the input commands but does not execute any reports.

The ATF report operands are:

LIST
Transaction Transit List

SUMMARY
Transaction Transit Summary

TRACE
Record Trace

EXTRACT
Exception Transaction extract

For further information about the report operands, their meaning, and default values, see the description of the corresponding dialog options in Chapter 28, “Requesting OMEGAMON ATF reports,” on page 659.

Part 10. Troubleshooting

This part provides a list of the messages produced by the batch interface and technical references to help you troubleshoot and diagnose IMS Performance Analyzer problems.

Chapter 30. IMS Performance Analyzer messages

Batch messages issued by IMS Performance Analyzer are listed here.

The batch messages listed here include messages issued by:
- The batch report processors for Log, Monitor, IMS Connect, OMEGAMON TRF and ATF input data
- The Automated File Selection utility, incorporating DBRC Log Selection and IMS Connect Extensions Journal File Selection

Messages issued exclusively by the dialog (and that do not have a message number) are not listed here. Instead, refer to the online help.

Message format

Each IMS PA batch processor message begins with a unique message identifier, followed by message text.

IPI*nnnnx Message Text variable*

The message identifier has the following format:

IPI The *program identifier* identifies the message as an IMS PA message. All IMS PA messages begin with IPI.

nnnn The *message identification number* is a four-digit number that uniquely identifies each message.

x The *severity level* is a letter that indicates the return code (RC), the purpose of the message and the type of response required. As they are issued from batch processes which are possibly running unattended, no messages are of a nature which require immediate action from the user. The severity levels, from least to most severe, are:

I Information. RC=00. Requires no action. This message is used only for advisory purposes.

W Warning. RC=04. A possible error has occurred but processing continues. You should evaluate results. Action is required if results are not as expected.

E Error (or Eventual Action). An error has occurred which requires eventual action by the user. Depending on the nature of the error, the associated report either continues accepting input records (RC=04), or stops accepting input but still reports processing until the error (RC=08), producing a partial reporting before processing stops.

The *Message Text* provides concise information about an event or condition of interest to the user, and may include *variable* text to identify system components or to provide other detailed information about the specific circumstance which caused the message.

An IMS PA message may contain the text of an IMS Connect Extensions functional support message identified by the prefix FUN. For an explanation of the IMS

Connect Extensions functional support messages, refer to the "Messages and Codes" in the *IBM IMS Connect Extensions for z/OS: User's Guide.*

Message descriptions

This section contains descriptions of all IMS PA batch processing messages. The messages are listed in message number order, all with the prefix `IPI`.

An IMS PA message may contain the text of an IMS Connect Extensions functional support message. For an explanation of the IMS Connect Extensions functional support messages identified by the prefix `FUN`, refer to the "Messages and Codes" in the *IBM IMS Connect Extensions for z/OS: User's Guide.*

IPI0001I IMS Started

Explanation: The first record with a time stamp has been read from the log input.

System action: Processing continues.

User response: None required.

IPI0002I Reporting starts within specified time range

Explanation: The first record with a time stamp equal to or after the global Start time has been read from the log input.

System action: Processing continues.

User response: None required.

IPI0003I Reporting stopped: elapsed time is *hhhh.mm.ss.thmiju*

Explanation: The first record with a time stamp after the global Stop time has been read from the log input. Reading of the log is complete.

System action: IMS PA proceeds to end of file processing.

User response: None required.

IPI0004I End of File signalled to Report Processors

Explanation: Either the global Stop time has been reached, or end of file on the log input has occurred.

System action: All active report processors are notified so that they can complete their processing.

User response: None required.

IPI0005I IMS Stopped

Explanation: End of file has been reached on the log input.

System action: IMS PA proceeds to end of file processing.

User response: None required.

IPI0006I Trace assumed Stopped, Hit Start Record

Explanation: A Monitor Trace Start record was encountered during monitor processing.

System action: IMS PA posts end of file to the active monitor reports, then restarts monitor processing.

User response: None required.

IPI0007I An HSB Takeover

Explanation: The log input file was closed by DFSFDLU0 for an HSB takeover.

System action: IMS PA continues processing.

User response: None required.

IPI0008I IMS stopped for RSR Takeover

Explanation: IMS has stopped for RSR plan takeover.

System action: IMS PA continues processing.

User response: None required.

IPI0009I Emergency Restart detected

Explanation: The log input file was closed by DFSFDLU0 for an Emergency Restart.

System action: IMS PA continues processing.

User response: None required.

IPI0010I IMS Restarted

Explanation: IMS has started.

System action: Processing continues.

User response: None required.

IPI0011I Large gap was found in Log Sequence after *seqnum,* **End of Data Set assumed**

Explanation: A large gap was detected in the log. The

end of data set was assumed; the remaining records will be skipped until the next checkpoint. *seqnum* was the sequence number of the log record before the gap.

System action: Processing continues.

User response: None required.

IPI0012W Line/PTERM has invalid status, Rec=*xx*, Reas=*nn*

Explanation: Rec=*xx* specifies the record code of the IMS log record that caused the problem. Reas=*nn* specifies an error reason code for diagnostics.

System action: If Rec=31 and Reas=13, IMS PA has encountered a Communications Get Unique whose destination is not known; IMS PA ignores the record and continues processing. Otherwise, IMS PA terminates the Resource Availability report.

User response: This may be an IMS or IMS PA error. Contact your IBM representative for help.

IPI0013E Resource Availability Reporting stopped due to error

Explanation: A Resource Availability Report processor has either abended or detected a condition it cannot recover from.

System action: Processing of log records is terminated for the Resource Availability report.

User response: Check the output with DD statement IPIDIAGS to identify the reason for the error. This may be an IMS or IMS PA error. Contact your IBM representative for help.

IPI0014W SMB has invalid status, Rec=*info*

Explanation: An invalid value was encountered in a field of a log record. Rec=*info* specifies the record code of the IMS log record that caused the problem.

System action: Processing terminates for the Resource Availability report.

User response: This may be an IMS error. Contact your IBM representative for help.

IPI0015W Region has invalid status, Rec=*info*

Explanation: An invalid value was encountered in a field of a log record. Rec=*info* specifies the record code of the IMS log record that caused the problem.

System action: Processing terminates for the Resource Availability report.

User response: This may be an IMS error. Contact your IBM representative for help.

IPI0016W PSB has invalid status, Rec=*info*

Explanation: An invalid value was encountered in a field of a log record. Rec=*info* specifies the record code of the IMS log record that caused the problem.

System action: Processing terminates for the Resource Availability report.

User response: This may be an IMS error. Contact your IBM representative for help.

IPI0017E DBD has invalid status, Rec=*xx*

Explanation: An invalid value was encountered in a field of a log record. Rec=*xx* specifies the record code of the IMS log record that caused the problem.

System action: Processing terminates for the Resource Availability report.

User response: This may be an IMS error. Contact your IBM representative for help.

IPI0018E LTERM not defined to IMS PA, Rec=*xx*

Explanation: An LTERM that has not been defined to IMS PA via a type 40 log record was encountered during transaction processing. Rec=*xx* specifies the record code of the IMS log record that caused the problem.

System action: Processing continues.

User response: Contact your IBM representative for help.

IPI0019E First segment missing

Explanation: A continuation segment was encountered without a first segment to go with it.

System action: The record is skipped. Processing continues.

User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0020E Record segments exceed indicated size

Explanation: A work area was allocated based on the length of the command buffer, as specified in the first segment of the record. However, as later segments were encountered, the work area was too small for the actual data.

System action: The program processes the data that it has.

User response: This is an IMS PA error. Contact your IBM representative for help.

IPI0021E Invalid record

Explanation: An invalid condition was detected in a type 02 log record.

System action: Processing continues.

User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0022E Error – input DRRN already in use

Explanation: A type 01 or 03 log record specified a DRRN that was already in use.

System action: Processing terminates for this report.

User response: Contact your IBM representative for help.

IPI0023E Unknown DC Trace record

Explanation: An unknown DC trace record (type 67 log record) was encountered.

System action: Processing continues.

User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0024E Statistics record has an invalid length

Explanation: A sub-section for the type 45 log record had an unsupported length. The record was bypassed. This condition might be caused by log records produced by an unsupported release (or maintenance level) of IMS. It might also occur when the format of the log input records does not match the specified IMS release.

System action: Processing continues.

User response: Ensure that the PARM= parameter on the EXEC statement matches the IMS version (VRM) of the logs being reported on. If the logs are from a sysplex with IMS systems at different release levels, ensure each system is listed in the IPIOPTS DD statement in the format `IMSPALOG SYSTEM(name,V`*`vrm`*`)`, for example `IMSPALOG SYSTEM(IMSB,V151)`. Correct the VRM and rerun the job. If unresolved, contact IBM Software Support.

IPI0025E Unsupported statistics record found

Explanation: An unknown subtype for the type 45 log record was detected. The record was bypassed. This condition might be caused by log records produced by an unsupported release (or maintenance level) of IMS.

System action: Processing continues.

User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0026E Unknown Latch statistic ID found, ID=*xxxx*

Explanation: An unknown latch ID was detected in the type 45, subtype 06, log record. The statistics associated with this ID were ignored.

System action: Processing continues.

User response: A change to the IMS log record may have occurred. Contact your IBM representative for help.

IPI0027E Unknown DL/I Calls Flags

Explanation: The Database Update Activity report encountered a database update log record (X'50') whose DL/I application call was not known.

System action: The database update is treated as an insert (ISRT) DL/I call.

User response: None required.

IPI0028E LTERM not found in table

Explanation: An LTERM that has not been defined to IMS PA via a type 40 log record was encountered.

System action: Processing terminates for this report.

User response: Contact your IBM representative for help.

IPI0029E DC Queue Manager Trace Report stopped due to error

Explanation: The DC Queue Manager Trace report has been stopped due to an error in Log processing.

System action: Processing terminates for this report.

User response: Check previous error message for reason.

IPI0030E Block Id length exceeds present capacity

Explanation: The Database Update Activity report encountered a database update log record (type 50) whose key data length was greater than 178 bytes.

System action: IMS PA ignores the log record and continues processing.

User response: Contact your IBM representative for help.

IPI0031E Block Id length changed

Explanation: Block ID lengths (from the type 50 log record) have changed. This would usually be due to an online change. Eight bytes were dumped with the message. The first four bytes contain the address of the VQ data element, the next two bytes are the saved ID length, and the last two bytes are the new ID length.

System action: Processing continues.

User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0032E Unknown Prefix change

Explanation: An unknown record identifier was detected in the type 30 log record.

System action: Processing continues.

User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0033E Invalid length in type 36 record

Explanation: The length of the type 36 log record was invalid.

System action: Processing continues.

User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0034E Invalid length in type 37 record

Explanation: The length of the type 37 log record was invalid.

System action: Processing continues.

User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0036W No data in specified time range. Graph ignored

Explanation: No records were selected from the log for processing.

System action: IMS PA does not print the Graph report.

User response: Make sure the global and report-level **Report Interval** dates and times are within those on the log being processed. Then rerun the job.

IPI0037E TCODE not found in table

Explanation: Region Histogram transaction termination processing cannot find the associated transaction start point.

System action: The Region Histogram report is stopped.

User response: Contact your IBM representative for help.

IPI0038E Histogram reporting stopped due to error

Explanation: The Region Histogram report has been stopped due to an error in Log processing.

System action: The Region Histogram report is stopped.

User response: Check the previous error message for the reason.

IPI0039E Logic error processing 01 record

Explanation: An output transaction was detected while processing the type 01 log record. A message queue record contained a still active output message when it was revised by input.

System action: Processing continues.

User response: Contact your IBM representative for help.

IPI0040E DRRN already in use

Explanation: A type 03 record specifies a DRRN already in use.

System action: Processing continues.

User response: Contact your IBM representative for help.

IPI0041E Logic error processing 03 record

Explanation: An output transaction was detected while processing the type 03 log record. Another output message with the same DRRN was found on the temporary output queue.

System action: Processing continues.

User response: Contact your IBM representative for help.

IPI0042I Unknown reason code in type 10 record

Explanation: An unknown reason code was encountered in a type 10 record.

System action: Processing continues.

User response: Include an IPIDIAGS DD statement in the JCL then rerun the job to get a snap of the problem record. Contact IBM Software Support with this information.

IPI0043E Unknown error code in type 24 record

Explanation: A VSAM database I/O error record contained an error code other than read or write.

System action: Processing continues.

User response: Include an IPIDIAGS DD statement in the JCL then rerun the job to get a snap of the problem record. Contact your IBM representative with this information.

IPI0044E **Missing Enqueue Record for Tran *xxxxxxxx* back from suspend queue**

Explanation: Transaction *xxxxxxxx* returned from the suspend queue, and a log record was missing from the input data set. The enqueue from the suspend queue back to the SMB queue was not detected.

System action: Processing continues. However, the output for this transaction may be incorrect.

User response: Contact your IBM representative for help.

IPI0045E **DRRN/CNT conflict**

Explanation: The origin CNT does not match the optional destination name due to missing log records.

System action: The queue entry in error is deleted, and processing continues.

User response: Contact your IBM representative for help.

IPI0046E **Logic error processing 31 record**

Explanation: A GU call from DL/I was encountered, either:
- When a GU from communications was expected, or
- With no QLGUOPDN field

System action: Processing continues.

User response: Contact your IBM representative for help.

IPI0047E **Missing Suspend Record for Tran *xxxxxxxx* back from Suspend Queue**

Explanation: Transaction *xxxxxxxx* returned from the suspend queue, and a log record was missing from the input data set. The enqueue to the suspend queue was not detected.

System action: Processing continues. However, the output for this transaction may be incorrect.

User response: Contact your IBM representative for help.

IPI0048E **Logic error processing 35 record**

Explanation: An output transaction was detected while processing the type 35 log record. A message queue record contained a still active input message when revised by output.

System action: Processing continues.

User response: Contact your IBM representative for help.

IPI0049E **Incomplete 01/03 message found**

Explanation: An incomplete or deleted message was represented by a type 01 or 03 log record. This might be caused by incorrect time control parameters, or incomplete logs may have been mounted.

System action: Processing continues.

User response: This may be an IMS problem. Contact your IBM representative for help.

IPI0050E **Uncommitted update count *nnnnnn* for database *xxxxxxxx* exceeds available storage**

Explanation: The maximum number of uncommitted block updates was reached. See "Database Update Activity report and extract" on page 346.

System action: The block update queue for database *xxxxxxxx* is deleted, and IMS PA reports ******** for the block update count for that database. Processing continues.

User response: Change the limit specified for the **Uncommitted Block Updates** option on the Database Update Activity panel, and resubmit the Report Set.

IPI0051W **IMS Log Sequence numbers lose continuity after *seqnum,* End of Data Set assumed**

Explanation: The sequence numbers of each successive log record should increase by one or more. A break in this pattern was detected.

System action: The end of data set was assumed; the remaining records will be skipped until the next checkpoint.

User response: None required.

IPI0052E **Invalid RQ chain off a TQ**

Explanation: When trying to delete a previously cancelled message, IMS PA did not find a response queue entry for the message.

System action: Processing terminates for this report.

User response: Contact your IBM representative for help.

IPI0053E **Conflicting Transaction codes in 01 and 08 records**

Explanation: The transaction codes located in the transaction queue and region queue should be the same.

System action: The offending transaction is discarded and processing continues.

User response: Contact your IBM representative for help.

IPI0054W Timestamp not found in Message Record – Record ignored

Explanation: The record was skipped because there was no time stamp in it.

System action: Processing continues.

User response: If you think the record should have had a time stamp, contact your IBM representative for help.

IPI0055E Transit Internal error, Rec=*xx*, Reas=*nn*

Explanation: Transit Report processing has detected an error. Rec=*xx* specifies the record code of the IMS log record that caused the problem. Reas=*nn* specifies an error reason code for diagnostics.

System action: Processing continues.

User response: Contact your IBM representative for help.

IPI0056E Conflicting Transaction codes in 01 and 07 records

Explanation: A type 07 log record was processed for which no corresponding type 01 log record exists.

System action: Processing continues.

User response: Contact your IBM representative for help.

IPI0057E Processing time is not greater than zero seconds

Explanation: The transaction time between the type 08 and 07 log records was negative.

System action: Processing continues.

User response: Contact your IBM representative for help.

IPI0059E Transit Reporting stopped due to error

Explanation: The Transaction Transit reports have been stopped due to an error in log processing.

System action: Transit processing terminates.

User response: Check the previous error message for the reason.

IPI0060E Unknown LTERM *xxxxxxxx* in 03 record; Message ignored

Explanation: Transit report processing encountered an output message log record (type 03) whose output destination was not defined.

System action: IMS PA ignores the log record and continues processing.

User response: None required.

IPI0061W *report subreport* Transit Report ignored, no data was filtered from Log

Explanation: No records were selected from the log for processing the specified *report* (for example, Analysis or Statistics) and *subreport* (for example, by Transaction or by LTERM).

System action: Processing continues.

User response: Make sure the global and report-level dates and times are within those on the log being processed, or that the **Include/Exclude Qualifiers** or other filtering options are correctly specified. Then resubmit the Report Set.

IPI0062E Error encountered building *xxx* Control Blocks, record subtype *nn*

Explanation: An error occurred while building the IMS PA control block tables for the CLB, CNT, PSB, or SMB.

System action: The remaining records were skipped until the next checkpoint. Processing continues.

User response: None required.

IPI0063E Error encountered building ETO CNT table

Explanation: IMS PA has encountered an error processing an ETO LTERM checkpoint record.

System action: Record is ignored, processing continues.

User response: IMS PA error. Contact your IBM representative for help.

IPI0064E Duplicate CNT name *xxxxxxxx* in checkpoint

Explanation: Multiple checkpoint records contain the same CNTNAME.

System action: Processing continues.

User response: If many of these messages are received (usually followed by a severe error), it probably indicates that the log is from a different IMS release level than that specified. Make sure that the IMS version specified in System Definitions corresponds to the IMS version of the log input files specified for that subsystem. Then rerun the job.

IPI0065E Logic error – CTB to CNT link failed

Explanation: IMS PA could not determine the physical terminal for an LTERM.

System action: Record is ignored, processing continues.

User response: IMS PA error. Contact your IBM representative for help.

IPI0066E Time difference negative - unusual sequence, record ignored

Explanation: A record processor detected a negative time difference for a DL/I call.

System action: The record is ignored, and processing continues.

User response: None required. This is a warning message indicating an irregular sequence found in the monitor trace. For further details, see "Nonstandard Monitor Record Sequences" in the *IMS Performance Analyzer for z/OS: Report Reference.*

IPI0067W Q Entry for Region Totals created

Explanation: IMS PA could not find the Region Totals Q entry.

System action: The entry is built and processing continues.

User response: None required.

IPI0068E No HISTOGRAM control specified, report not run

Explanation: The monitor Histogram processing modules determined that Histogram control was not specified in the control table IPIATBLE.

System action: The Histogram is omitted, and processing continues.

User response: Contact your IBM representative for help.

IPI0069E Monitor file has record out of place, waiting for trace start

Explanation: IMS PA was expecting a trace start monitor record.

System action: The record is ignored and processing continues.

User response: None required.

IPI0072E Call records out of sequence, record ignored

Explanation: In a monitor trace, a type 61 (DL/I call ended) record was found when no call was started.

System action: The record is ignored, and processing continues.

User response: None required. This is a warning message indicating an error in the monitor formatting module. For further details, see "Nonstandard Monitor Record Sequences" in the *IMS Performance Analyzer for z/OS: Report Reference.*

IPI0073E Invalid schedule start (end of prior), record ignored

Explanation: The explanation depends on the IMS system in use, as follows:

- In a monitor trace, the PSB name and Transaction Code from a type 02, 06, or 10 (scheduling started) record did not match the PSB name and Transaction Code from the previous type 03, 07, or 11 (scheduling ended) record.
- In a monitor trace, a type 61 (DL/I call ended) record was expected, but was not received before this type 02, 06, or 10 (scheduling started) record.

An error in the execution of the online IMS monitor formatting routine may have occurred.

System action: The trace record is not used, and processing continues.

User response: None required. This is a warning message indicating an irregular sequence found in the monitor trace. For further details, see "Nonstandard Monitor Record Sequences" in the *IMS Performance Analyzer for z/OS: Report Reference.*

IPI0074E IWAIT ignored, no IWAIT start or not in a call

Explanation: In a monitor trace, one of the following occurred:

- An IWAIT end record was read for which no IWAIT start record was received.
- An IWAIT end record was read that is a different type than the previously read IWAIT start record.

System action: Processing continues, and the record is ignored.

User response: None required. This is a warning message indicating an error in the monitor formatting module. For further details, see "Nonstandard Monitor Record Sequences" in the *IMS Performance Analyzer for z/OS: Report Reference.*

IPI0075E Call records out of sequence, this record overrides

Explanation: In a monitor trace, two successive type 60 (DL/I call started) records were found without an intervening call end record.

System action: Processing continues, using the last record.

User response: None required. This is a warning message indicating an error in the monitor formatting module. For further details, see "Nonstandard Monitor Record Sequences" in the *IMS Performance Analyzer for z/OS: Report Reference.*

IPI0076E ITask ID does not match expected, record ignored

Explanation: In a monitor trace, an unexpected ITask sequence number was found on a trace record.

System action: The record is ignored, and processing continues.

User response: None required. This is a warning message indicating an irregular sequence found in the monitor trace. For further details, see "Nonstandard Monitor Record Sequences" in the *IMS Performance Analyzer for z/OS: Report Reference.*

IPI0077E ITask ID does not match expected, ITask ID reset

Explanation: In a monitor trace, an unexpected ITask sequence number was found on a trace record.

System action: The record is ignored, and processing continues.

User response: None required. This is a warning message indicating an irregular sequence was found in the monitor trace. For further details, see "Nonstandard Monitor Record Sequences" in the *IMS Performance Analyzer for z/OS: Report Reference.*

IPI0078E Additional Buffer Prime Call required for schedule

Explanation: During region scheduling, more than one buffer priming call was made to the input message queue to obtain a message.

System action: Processing continues.

User response: None required. This is an unusual IMS occurrence. A large number of such occurrences may indicate a problem in message region scheduling.

IPI0079E Trancode with PSBNAME *xxxxxxxx* scheduled, no call resulted

Explanation: Specified PSB was scheduled, but no database calls resulted.

System action: Processing continues.

User response: None required.

IPI0080E Processing aborted since DCB failed to open

Explanation: IMS PA was unable to open the data control block for the data set that was to receive the statistics records from the monitor trace.

System action: Processing continues, and this function is skipped.

User response: Correct the data set name specified for **Trace Data Set** on the Monitor Global Options panel. Check the DD statement for IPISTOUT. Then resubmit the Report Set.

IPI0081E SYSPRINT DD statement missing - run halted

Explanation: SYSPRINT DD statement is missing from the JCL.

System action: Processing terminates.

User response: Add the SYSPRINT DD statement to the JCL and resubmit the job.

IPI0082E IPIRSET DD statement missing - run halted

Explanation: The Report Set data set is not allocated.

System action: Report Set processing terminates.

User response: Add the Report Set data set to the JCL and resubmit the job.

IPI0083E Member *xxxxxxxx* not in Report Set format

Explanation: The specified member is not in IMS PA Report Set format.

System action: Report Set processing terminates.

User response: Verify the specified Report Set name is a valid Report Set.

IPI0084I Report Set *xxxxxxxx* read successfully

Explanation: The specified Report Set has been read without error.

System action: Processing continues.

User response: None required.

IPI0085W No required report options are set

Explanation: The Report Set has an activated report, but the report has no required report options set.

System action: IMS PA ignores this report, but continues processing the rest of the Report Set.

User response: Select the report you require and resubmit the job.

IPI0086E No reports active in Report Set

Explanation: The Report Set has no active reports.

System action: IMS PA does not process the Report Set.

User response: Activate the reports you require and resubmit the job.

IPI0087E Object List read error, *reason*

Explanation: IMS PA failed to read an Object List from file IPIOBJL. Typical reasons include that the DDname IPIOBJL is not in the JCL, or the required Object List is not found in the PDS specified by IPIOBJL.

System action: IMS PA does not process the Report Set.

User response: Correct the problem and resubmit the job.

IPI0088E Distribution read error, *reason*

Explanation: IMS PA failed to read a Distribution from file IPIDIST. Typical reasons include that the DDname IPIDIST is not in the JCL, or the required Distribution is not found in the PDS specified by IPIDIST.

System action: IMS PA does not process the Report Set.

User response: Correct the problem and resubmit the job.

IPI0089E User Program module *xxxxxxxx* **could not be found**

Explanation: The specified User Program module name could not be found in the STEPLIB libraries.

System action: IMS PA continues processing. The User Program will not be run.

User response: Ensure the User Program module resides in the User Program Load Library. This library is specified in the **User Program Load Library** option on the IMS PA Settings panel, and is used as a STEPLIB library at report submit time. See "IMS PA Settings" on page 67.

IPI0090E System module *xxxxxxxx* **could not be found**

Explanation: IMS PA could not find the specified module in the STEPLIB. If the module name is DFSVC000, IMS PA was loading it to determine your IMS release.

System action: Report Set processing terminates immediately.

User response: If the module name is DFSVC000, either specify the IMS version in the JCL PARM specification as `'Vnnn'`, where *nnn* is either 121, 131, 141, or 151, or add the IMS RESLIB data set to the STEPLIB concatenation.

If it is an IMS PA module, check that your IMS PA load library was specified correctly. This library is specified in the **IMS PA Load Library** option on the IMS PA Settings panel, and is used as a STEPLIB library at report submit time. See "IMS PA Settings" on page 67.

Correct the entries, then resubmit the job. If the problem persists, contact your IBM representative for help.

IPI0091E Report Set *xxxxxxxx* **at level** *nnn* **not supported by IMS PA level** *mmm*

Explanation: The Report Set specified for processing was built at a higher level of IMS PA than is currently processing.

System action: Report Set processing terminates immediately.

User response: If you have recently upgraded your level of IMS PA, ensure that the JCL you are submitting specifies the new IMS PA load library.

IPI0092I Management Exception Transaction Averages saved into DSN *datasetname*

Explanation: The Management Exception report has built the specified Averages Data Set with Transaction Transit information from the log input files.

System action: IMS PA continues processing.

User response: Averages Data Sets can be viewed from option **5 Averages** of the dialog.

IPI0093I Management Exception Transaction Averages merged into DSN *datasetname*

Explanation: The Management Exception report has built the specified Averages Data Set by merging Transaction Transit information from the log input files, together with an old Averages Data Set.

System action: IMS PA continues processing.

User response: Averages Data Sets can be viewed from option 5 **Averages** of the dialog.

IPI0094E **Transit Log Report file** *xxxxxxxx* **allocation failed**

Explanation: The Transaction Transit Log report processor failed to dynamically allocate the specified output file. IMS PA attempts to allocate the Log output file like the SYSPRINT file.

System action: The Transaction Transit Log report is ignored.

User response: Specify the Transaction Transit Log output file DD directly in the JCL, avoiding the need for the Log report processor to dynamically allocate it.

IPI0095E **IMS PA has failed ABENDxxxx-xxxxxxxx, recovery attempt in progress**

Explanation: IMS PA has abended with the specified abend code.

System action: IMS PA attempts to recover from the abend condition. All input file processing is stopped. Incomplete reports are written with the available data. However, if IMS PA abends a second time during this attempt, then no further recovery is attempted and the job step immediately abends.

User response: The abend code may indicate a user or environmental error. Common abend codes are:

S002 Input file I/O error, check that the log input file contains valid data.

S0C7 Sometimes caused by an incorrect IMS version specification, check the EXEC PARM='Vnnn' specification.

S80A Short of storage condition, increase the REGION size.

S878 Short of storage condition, increase the REGION size.

S913 Security violation, check with your security administrator.

Other abend codes, for example S0C4, may indicate a problem with IMS PA. Rerun the job with EXEC PARM='Vnnn,NOSTAE' and a SYSUDUMP DD to collect the dump. For more information on the required JCL, see “Obtaining dumps” on page 719. Then contact IBM.

IPI0096E **Report Form read error,** *reason*

Explanation: IMS PA was unable to find or decode a Report Form specified in a Report Set. Typical reasons include that the DDname IPIFORM is not in the JCL, or the specified Report Form is not found in the Report Forms data set.

System action: IMS PA does not process the Report Set.

User response: Correct the problem if it relates to the specification of a Report Forms data set or member, then resubmit the report request. Otherwise, contact your IBM representative for help.

IPI0097I *nnnnnnnnn* **records written to IMS Transaction Index**

Explanation: The number of records written to the IMS Transaction Index data set. The IMS Transaction Index is created from IMS log files and contains one record of accumulated information for each transaction on the input logs.

System action: IMS PA continues processing.

User response: None required. The IMS Transaction Index is available for reporting.

IPI0098I **Premature End of File, reports may be incomplete**

Explanation: End of file was reached for the monitor data set, but no SLOG 91 (monitor stop) event was detected. Monitor file creation may have ended with ABENDx37 due to a data set size constraint.

System action: Reporting terminates. All the reports are written using the available data. The Buffer Pool & Latch Statistics report, if requested, will be incomplete.

User response: Ensure the size of the monitor data set is large enough to contain the volume of data you need to collect.

| **IPI0099W** **More than 150 x**

IPI0100W **Command is ignored -** *command name*

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA encountered an unsupported command.

System action: The command is ignored and processing continues.

User response: Verify that the command has no impact on IMS PA processing of a Report Set. If it does, contact your IBM representative for help; otherwise the command can be ignored.

IPI0101E **Report Set file IPIRSET not allocated**

Explanation: IPIRSET DD statement is missing from the JCL.

System action: Processing terminates.

User response: Add the required DD statement to the JCL and resubmit. During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA creates the new Report Set in the PDS specified with DDname IPIRSET. A member name must be specified.

IPI0102W **Operand is ignored -** *operand name*

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA encountered an operand where it was not expected.

System action: The operand is ignored and processing continues.

User response: Check that the operand does not impact the use of the new Report Set. If it does, you may be able to activate the operand from the IMS PA dialog. Otherwise, contact your IBM representative for help.

IPI0103W **Operand is unsupported -** *operand name*

Explanation: The specified operand is not supported by IMS PA.

System action: IMS PA ignores the operand (and its suboperands) and continues processing.

User response: Verify that the Report Set performs the required functions.

IPI0104E **Operand out of context -** *operand name*

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA encountered an operand used out of context.

System action: Processing terminates.

User response: Check that the operand does not impact the use of the new Report Set. If it does, you may be able to activate the operand from the dialog. If so, remove the operand and rerun the job. Otherwise, contact your IBM representative for help.

IPI0105E **Report Set build has failed**

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA encountered an error. A previous error message will have described the error condition.

System action: Processing terminates.

User response: Identify any previous error messages issued and check the reason for the errors.

IPI0106I **Report Set** *Report Set name* **built successfully**

Explanation: IMS PA has successfully converted IMSPARS or IMSASAP commands to an IMS PA Report Set.

System action: Processing continues.

User response: None required.

IPI0107E **Object List build failed, reason =** *failure reason*

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA could not create an Object List for the reason specified; for example, DDname missing.

System action: References to the Object List name in the Report Set are set to `*ERROR`, and processing continues.

User response: Correct the reason for the failure and rerun the job.

IPI0108I **Object List** *Object List name* **connected, status =** *status*

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA created an Object List that is used by the Report Set.

System action: Processing continues.

User response: None required.

IPI0109E **Distribution build failed, reason =** *failure reason*

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA could not create a Distribution for the reason specified; for example, DDname missing.

System action: References to the Distribution name in the Report Set are set to `*ERROR`, and processing continues.

User response: Correct the reason for the failure and rerun the job.

IPI0110I **Distribution** *Distribution name* **connected, status =** *status*

Explanation: During conversion of IMSPARS or IMSASAP commands to Report Set format, IMS PA created a Distribution that is used by the Report Set.

System action: Processing continues.

User response: None required.

IPI0111E **Report Set File IPIRSET does not include a member name**

Explanation: IPIRSET DD does not include a member name. IMS PA identifies the Report Set name from the member name specification.

System action: Processing terminates.

User response: Add a member name to the IPIRSET DD statement and rerun the job.

IPI0120I Expectation Set *name* built successfully

Explanation: IMS PA has successfully converted an IMSPARS expectation file to the new IMS PA Expectation Set format.

System action: Processing continues.

User response: None required.

IPI0121E Expectation Set build has failed, reason = *error reason*

Explanation: IMS PA has failed to convert an IMSPARS expectation file to the new IMS PA Expectation Set format.

System action: Processing terminates.

User response: If possible, correct the error and rerun the conversion. Otherwise, contact your IBM representative for help.

IPI0130E Error in Parameter *parameter number*

Explanation: The IMS PA Export/Graph module has detected an error in the EXEC PARM.

System action: Processing terminates.

User response: If the job was submitted from the IMS PA dialog, an error constructing the parameter has occurred. Contact your IBM representative for help.

IPI0131E Extract Input File *ddname* not allocated

Explanation: The IMS PA Export/Graph module required the Extract Data Set to be allocated.

System action: Processing terminates.

User response: If the job was submitted from the IMS PA dialog, check the JCL built by the SUB or JCL command to ensure that the Extract Data Set was properly included.

IPI0132E Export Output File *ddname* not allocated

Explanation: The IMS PA Export/Graph module required the Export Data Set to be allocated.

System action: Processing terminates.

User response: If the job was submitted from the IMS PA dialog, check the JCL built by the SUB or JCL command to ensure that the Export Data Set was properly included.

IPI0133E Error converting Extract Record, *reason*

Explanation: The IMS PA Export/Graph module failed to convert an Extract record into an Export or Graph record.

System action: Processing terminates.

User response: Verify that the Extract Data Set was created successfully from the Extract report process. If it was, contact your IBM representative for help.

IPI0134E Extract data set does not contain valid extract data

Explanation: The IMS PA Export/Graph module detected a record in the Extract Data Set that is not in Extract format.

System action: Processing terminates.

User response: Ensure that an Export Data Set was not inadvertently specified as the Extract Data Set. Verify that the Extract Data Set was created successfully from the Extract report process; if it was, contact your IBM representative for help.

IPI0135E Extract data set is empty

Explanation: The IMS PA Export/Graph module detected that the Extract Data Set is empty.

System action: Processing terminates.

User response: Run an Extract report to populate the Extract Data Set.

IPI0136E No Extract records selected

Explanation: The IMS PA Export/Graph module could not find any records in the Extract Data Set that matched the selected filtering options. The *reason* can be:

- **Range** *From Date/Time - To Date/Time.* The specified date/time range does not fall within the date/time range of the extract. The date/time range included in the message is that of the Extract Data Set.
- **Interval data not collected.** Interval data was requested for the export/graph request, but interval data is not contained in the Extract Data Set.
- **Transaction data not collected.** Transaction data was requested for the export/graph request, but transaction data is not contained in the Extract Data Set.
- **Transaction** *Trancode* **data not collected.** The specified transaction code was requested for the export/graph request, but the Extract Data Set does not include data for that transaction code.
- **Check filtering options.** An unknown reason caused no extract records to be selected.

System action: Processing terminates.

User response: Ensure the requested date/time range falls within the date/time range of the data in the Extract Data Set, or that the selected transaction code is in the Extract Data Set. If you want to export or graph the data by Interval or by Transaction, ensure the data in the Extract Data Set was extracted according to that same criteria. Correct the offending options and retry

the request. If the reason for the problem cannot be established, contact your IBM representative for help.

IPI0137E **GDDM has failed to display/print graph, RC=***return code*

Explanation: The IMS PA Graph module failed to display (or print) a graph using GDDM.

System action: Processing terminates.

User response: Check the previous error message for the failure reason. Correct the problem and retry the request.

IPI0138E *Graph/Export* **request has failed, RC=8**

Explanation: The IMS PA Export/Graph module has failed to perform the request.

System action: Processing terminates.

User response: Check the previous error message for the failure reason. Correct the problem and retry the request.

IPI0139I *Graph/Export* **request completed successfully, RC=0**

Explanation: The IMS PA Export/Graph module has completed successfully. The Export Data Set or GDDM graphs have been successfully built.

System action: None required.

User response: The Export Data Set is now ready for processing, or the GDDM graphs are ready for viewing.

IPI0140E **Peak Percentage invalid -** *percentage*

Explanation: The IMS PA Export/Graph module detected that the peak percentage specification is not within the range 50 to 100.

System action: Processing terminates.

User response: Correct the Peak Percentage specification and retry the request. This error should not occur in the IMS PA dialog. If it was, contact your IBM representative for help.

IPI0141E **GDDM is not available**

Explanation: The IMS PA Export/Graph module detected that the GDDM interface program (ADMASPLT) was not available.

System action: Processing terminates and no graphs are produced.

User response: Make the GDDM interface program accessible to IMS PA by adding the GDDM execution library to the load module search path of your job.

IPI0142W **Graphs terminated via End or Cancel**

Explanation: The display of multiple graphs has been interrupted by the user pressing the End or Cancel key.

System action: If there are more graphs beyond this point, they are not displayed, and the user is returned to the invoking panel.

User response: None required.

IPI0143E **GDDM abnormal termination** *abend code*

Explanation: GDDM terminated abnormally giving an abend code such as S806.

System action: The extract graphing process terminates.

User response: Check your GDDM and GDDM-PGF installation. If the reason for the problem cannot be established, contact your IBM representative for help.

IPI0144E **Printer name '***printer ID***' is not a valid GDDM nickname**

Explanation: The specified Printer ID is unknown to GDDM.

System action: The extract graphing print process terminates.

User response: Specify a valid GDDM nickname for the Printer ID and resubmit the print request.

IPI0145E **Extract and Export DSNs cannot be the same data set**

Explanation: The name of the Extract Data Set specified on the Extract Graphing & Export panel is the same as that specified for the Export Data Set on the Extract Export panel.

System action: IMS PA terminates export processing.

User response: Ensure the Extract Data Set has been created from a Transit Extract by Interval report and the Export Data Set has a different name.

IPI0250E **GETDSAB macro error, Ret=***xx***, Reas=***nn*

Explanation: IMS PA received a bad return code from the GETDSAB macro.

System action: IMS PA processing terminates.

User response: IMS PA error. Contact your IBM representative for help.

IPI0251E **No log input files specified in the JCL**

Explanation: IMS PA could not find any DD statements referring to log input files in the JCL.

System action: IMS PA processing terminates.

User response: IMS PA generates unique DDnames for the log input files for the specified system or group of systems. Check your System Definitions, then rebuild your JCL from the dialog.

IPI0252E **ATTACH macro error, Ret=***xx*

Explanation: IMS PA received a bad return code from the ATTACH macro.

System action: IMS PA processing terminates.

User response: IMS PA error. Contact your IBM representative for help.

IPI0253E **Pre-Merge Subtask Abended, DD=***xxxxxxxx*, **Abend Code=***yyyyyyyy*, **Reason Code=***nnnnnnnn*

Explanation: IMS PA pre-merge copy processing has abended while copying required log records from the shared queue log input file on tape to the DASD merge work file.

System action: IMS PA processing terminates.

User response: If the abend code is 80x37000 (Sx37 abend), then the merge work file specified is probably too small. On the Shared Queue Settings panel, increase the space allocation settings in the **Shared Queue Merge Work File Allocation Details,** then resubmit the job. Otherwise, contact your IBM representative for help.

IPI0254E **Merge Work File DD** *xxxxxxxx* **statement missing**

Explanation: IMS PA pre-merge copy processing required the specified merge work file DD to be allocated when processing a shared message queue log file.

System action: IMS PA processing terminates.

User response: Ensure that the merge work file allocation settings are correct in the **Shared Queue Settings** option in the dialog. Rebuild your JCL from the dialog.

IPI0255I *xxxxxxx* **Input File** *xxxxxxxx* **Pre-Merge Copy from Tape to DASD has Started**

Explanation: IMS PA pre-merge copy processing has started to process the specified file.

System action: IMS PA continues processing.

User response: None required.

IPI0256I *xxxxxxx* **Input File** *xxxxxxxx* **Pre-Merge Copy Start of Time Range**

Explanation: IMS PA pre-merge copy processing has detected the first log record in the specified input file that falls within the requested date/time range of the Report Set.

System action: IMS PA commences to copy required records from the input file on tape to the DASD merge work file.

User response: None required.

IPI0257I *xxxxxxx* **Input File** *xxxxxxxx* **Pre-Merge Copy End of Time Range**

Explanation: IMS PA pre-merge copy processing has detected the last record in the specified input file that falls within the requested date/time range of the Report Set.

System action: IMS PA stops processing the current input file, and continues onto the next.

User response: None required.

IPI0258I *xxxxxxx* **Input File** *xxxxxxxx* **Pre-Merge Copy from Tape to DASD has Ended**

Explanation: IMS PA pre-merge copy processing has completed processing the specified input file.

System action: IMS PA continues processing.

User response: None required.

IPI0259I **Recs/Bytes In=***numrecs/numbytes*, **Out=***numrecs/numbytes*

Explanation: The current log input file specified in the previous IPI0258I message has completed pre-merge copy processing. This message details how many records and bytes were read in from the shared queue log input file, and how many records and bytes were written out to the merge work file.

System action: IMS PA continues processing.

User response: None required.

IPI0300I **System** *xxxx* **Log Started, DDname=***ddname*

Explanation: IMS PA has commenced processing log records from log input files for the specified IMS subsystem.

System action: IMS PA continues processing.

User response: None required.

IPI0301I **System *xxxx* Start of Time Range**

Explanation: IMS PA has reached the first log record within the user-specified time range.

System action: IMS PA continues processing.

User response: None required.

IPI0302I **System *xxxx* End of Time Range**

Explanation: IMS PA has reached the last log record within the user-specified time range.

System action: IMS PA continues processing.

User response: None required.

IPI0303I **System *xxxx* Log Ended, DDname=*ddname***

Explanation: IMS PA has completed processing log records from log input files for the specified IMS subsystem.

System action: IMS PA continues processing.

User response: None required.

IPI0304I **System *xxxx* Stopped**

Explanation: The specified IMS subsystem has been stopped, or log input end of file has been reached.

System action: IMS PA performs End of File processing. In an IMS sysplex with multiple IMS subsystem log input IMS PA continues processing the log input of the remaining IMS subsystems.

User response: None required.

IPI0305I **System *xxxx* HSB Takeover**

Explanation: The log input file was closed by DFSFDLU0 for an HSB takeover for the specified IMS subsystem.

System action: IMS PA continues processing.

User response: None required.

IPI0306I **System *xxxx* stopped for RSR Takeover**

Explanation: IMS has stopped for RSR takeover for the specified IMS subsystem.

System action: IMS PA continues processing.

User response: None required.

IPI0307I **System *xxxx* Emergency Restart detected**

Explanation: The log input file was closed by DFSFDLU0 for an emergency restart for the specified IMS subsystem.

System action: IMS PA continues processing.

User response: None required.

IPI0308I **System *xxxx* Restarted**

Explanation: Specified IMS subsystem has been restarted.

System action: Processing continues.

User response: None required.

IPI0309W **Large time gap was found in log input, End of Data Set assumed**

Explanation: A large time gap was detected in the log input. IMS PA performs End of Data Set processing, then resumes normal record processing from that point.

System action: Processing continues.

User response: None required.

IPI0310I **Transit processing started**

Explanation: IMS PA Transit Report processing has detected the first complete Transaction Set. Transit reports start from this time.

System action: IMS PA continues processing.

User response: None required.

IPI0311I **Transit processing ended, Transaction Sets processed=*xxxxxxxx***

Explanation: IMS PA Transit Report processing has detected the last complete Transaction Set. Transit reports stop at this time.

System action: IMS PA continues processing.

User response: None required.

IPI0312W **Transit processing ended, no Transaction Sets were processed**

Explanation: IMS PA Transit Report processing did not detect any complete Transaction Sets. Transit reports will not be produced.

System action: IMS PA continues processing other selected reports.

User response: Verify that the log input file data falls within the date-time range you specified for reporting. For shared message queue log input, ensure that all IMS subsystems in the sysplex have log input for the specified time range of the report.

IPI0313I **Log input for System** *xxxx* **contains a Checkpoint for system** *yyyy*

Explanation: IMS PA detected log input where the IMS subsystem ID specified in the DDname does not match the IMS subsystem ID in the Checkpoint log record.

System action: IMS PA continues processing and reporting for that subsystem with the subsystem ID specified in the log input DDname, and ignores the subsystem ID in the Checkpoint log record.

User response: If you wish to correct the IMS subsystem ID for future reports, rename the subsystem in System Definitions in the dialog.

IPI0314I **Transit processing detected** *nnnnnnn* **Shared Queue Transactions with missing Log records**

Explanation: At the completion of transit processing, *nnnnnnn* shared queue transactions were not reported because some log data for the transactions was not available. The missing log data may be from another IMS subsystem in the sysplex.

System action: Shared queue transactions with missing log data are not reported by IMS PA.

User response: Ensure log data from all IMS subsystems in the sysplex is specified in the IMS PA System Definitions. Minimize the number of unprocessed transactions and reduce IMS PA processing time by specifying a global Report Interval that intersects the log input from all IMS subsystems in the sysplex.

IPI0315I **Transit processing detected** *nnnnnnnn* **Transactions that were not completed**

Explanation: At the completion of transit processing, *nnnnnnnn* transactions were not reported because they had not completed within the time range or by the end of the log input.

System action: Incomplete transactions are not reported by IMS PA.

User response: None required.

IPI0316I *xxxxxxxx* **Input File** *ddname* **lost continuity. Rec=***nnnnnnnn* **Time=***time1/time2*

Explanation: A sequence error was detected in the specified input file. Records should be in chronological sequence, but record *nnnnnnnn* has a time stamp earlier than the previous record. The time stamps *time1* and *time2* caused the gap condition. *xxxxxxxx* is the type of file, for example, Log.

System action: Reporting continues. This message is only issued once and subsequent conditions are ignored.

User response: None required, although you might investigate why the input file contains sequence errors. To ignore log sequencing errors and suppress this message, specify Log global option IGNORSEQ.

IPI0317I *xxxxxxxx* **Input File** *ddname* **lost continuity. Rec=***nnnnnnnn* **Seq=***seq1/seq2*

Explanation: A sequence error was detected in the specified input file at record *nnnnnnnn*. The sequence numbers of successive log records should increase. The sequence numbers *seq1* and *seq2* caused the discontinuity condition. *xxxxxxxx* is the type of file, for example, Log.

System action: Reporting continues. This message is only issued once and subsequent conditions are ignored.

User response: None required, although you might investigate why the input file contains sequence errors. To ignore log sequencing errors and suppress this message, specify Log global option IGNORSEQ.

IPI0318I **Log input for System** *xxxx* **sequence IMS PAinterruption detected, End of Data Set assumed**

Explanation: IMS PA encountered a log record sequence gap or continuity problem. Message IPI0316I or IPI0317E will precede this message detailing the nature and location of the problem.

System action: IMS PA performs end of data set processing, then resumes record processing from the start of the sequence interruption.

User response: None required.

IPI0320E **Transaction History File IPITHIST DD statement missing**

Explanation: The Transaction History File was requested in your report request, but the Transaction History File DD name is missing from the JCL.

System action: The request is aborted.

User response: Specify the Transaction History File DD in the JCL and resubmit the request.

IPI0321I **Transaction History File Collection completed successfully**

Explanation: Transaction History File data was successfully written to the data set.

System action: Processing continues.

User response: Use DB2 to analyze the data contained in the Transaction History File.

IPI0322E **Transaction History File Collection aborted due to previous error**

Explanation: The Transaction History File request failed due to a previous error.

System action: The request is aborted.

User response: Identify and action the previous error message that caused this request to fail.

IPI0323W **Transaction History File Collection detected that no data was filtered from Log**

Explanation: The Transaction History File request failed because there was no log data for the requested reporting period.

System action: The request is aborted.

User response: Verify that log data is available in the required reporting period.

IPI0330E **Load Failed for Transaction Substitution Exit, TRANEXT=***exitname*

Explanation: IMS PA could not load the specified Transaction Substitution Exit.

System action: Reporting continues without Transaction Substitution.

User response: Verify that the Transaction Substitution Exit module resides in the STEPLIB library.

IPI0331W **System** *info*

IPI0332E **Unsupported IMS version** *ver* **input detected, processing terminated**

IPI0333W **Transit processing flushed incomplete transactions due to HWM constraints**

Explanation: During transaction transit processing, IMS Performance Analyzer was forced to flush some incomplete transactions because high-water-mark (HWM) limits were reached. Transactions are not clearing because all the log records for the transaction are either not available or have not been processed yet.

System action: Incomplete transactions are passed to the report processors. The transactions might appear in transit report results depending on the report criteria specified.

User response: If the REGION parameter is not set to the maximum size, you can set REGION=0M to attempt to reduce the occurrence of this message.

IPI0340I **Loginfo report processing abandoned, increase REGION parameter and re-run**

IPI0351E **INFLIGHT data set processing failed: Rsn=***reas info*

Explanation: The reading of incomplete system and transaction information from in-flight data set in preparation for continuous reporting has failed due to an internal logic error, indicated by a reason code, where the contents of the inflight data set are not as expected.

System action: Processing stops immediately – no reports are produced.

User response: For a system abend, take the corrective action that is appropriate for the problem. Some reason codes are recoverable:

- 0001 The inflight data set in incomplete or truncated. The likely cause is that the previous job failed. Check its output for message "IPI0353E" on page 699 and take the recommended corrective action.
- 0002 Inflight processing caused a short-of-storage condition. Increase the region, for example EXEC PGM=IPIMAIN,REGION=0M.

All other reasons codes are internal log errors and are not recoverable.

If no corrective action is possible, then you must retry your request with an empty inflight data set.

If the out-flight data set is a GDG and one was created by this failed job; then delete it. This will ensure that the correct (same) inflight data set will be used by the retry job.

If the problem persists then contact your IBM representative.

IPI0352E **INFLIGHT processing failed: Rsn=S***info-info info*

Explanation: The reading of incomplete system and transaction information from in-flight data set in preparation for continuous reporting has failed. The abend code provides the reason for the failure, where an I/O error or other system problem has occurred.

System action: Processing stops immediately – no reports are produced.

User response: For a system abend, take the corrective action that is appropriate for the problem.

If no corrective action is possible, then you must retry your request with an empty inflight data set. In this case, inflight processing is considered to be interrupted and some loss of incomplete transactions may occur.

If the out-flight data set is a GDG and one was created

by this failed job; then delete it. This will ensure that the correct (same) inflight data set will be used by the retry job.

If the problem persists then contact your IBM representative.

IPI0353E INFLIGHT processing failed: Rsn=S*info*-*info* *info*

Explanation: The writing of incomplete system and transaction information to the out-flight data set has failed. The abend code provides the reason for the failure. The out-flight data set is considered to be incomplete and cannot be used as inflight to the next job.

System action: All report requests are completed. Out-flight data for this run is lost.

User response: In order to provide a valid inflight for the next run, you must recover from this problem by following these steps:

1. Resolve the problem with the out-flight data set. Common problems include:
   - ABENDSx37 out-of-space conditions: Increase the `SPACE=` specification for the out-flight data set
   - ABENDS913 data set access is denied: Contact your RACF security administrator to grant you access to the out-flight data set.
2. If the out-flight data set is a GDG then delete this latest generation to ensure that the inflight data set for the rerun is the same inflight that was used for the original run that failed.
3. In some cases it may be inconvenient to re-run the job because it has created GDG data sets (transaction index for example) that are valid and you do not want duplicated.

   To avoid running the reports again, add `REPAIROUTFLIGHT` to the PARM parameter of the EXEC statement (for example, `EXEC PGM=IPIMAIN,PARM='V151,REPAIROUTFLIGHT'` and remove all new data set allocations from the JCL.

   `REPAIROUTFLIGHT` will cause all report requests to be ignored. The only action performed is to write the incomplete information to the out-flight data set.
4. Rerun the job

If the condition is unrecoverable then you must ensure that the out-flight data set is available and empty prior to it being used as inflight into the next run. In this case, some incomplete transactions may be lost. If the problem persists then contact your IBM representative.

IPI0354I Inflight processing is disabled because no transit reports were requested

IPI0355W *info* caused override of transit option to - *info*

IPI0356E Merging of shared queue logs is not supported for Inflight

Explanation: Inflight processing only supports input from a single system.

System action: The request is aborted.

User response: Resubmit the job with input from a single system.

IPI0357W Global Start/Stop times ignored for Inflight processing

Explanation: All log input records must be processed if Inflight is activated Global Start/Stop times cause records outside the specified time to be skipped which would result in incomplete Inflight results.

System action: Any specified Global Start/Stop times are ignored and the full log input is processed.

User response: If partial log input processing is required then Inflight processing should not be activated.

Note: Start/Stop times may be specified for certain individual Transit reports, these times will be honoured even if Inflight is active.

IPI0358E `BMPSYNC setting for Inflight creation does not match current run`

Explanation: The BMPSYNC option specified in the current run does not match that of the job used to create the Inflight data set.

System action: The request is aborted.

User response: Resubmit the job with the same BMPSYNC option used to create the Inflight data set. To change the BMPSYNC option, the Inflight process must be restarted with no Inflight data set or an empty one.

IPI0400I *report* not produced, no data available

Explanation: The specified report was not produced because the monitor file did not contain records required to build this report.

System action: IMS PA does not produce the specified report.

User response: If the specified report is a Fast Path Analysis report and report output is expected, then verify that records for the report were requested in the /TRACE MONITOR FP command.

IPI0401E **FP Resource Contention Summary detected unsupported resource type** *'xx'*

Explanation: The Fast Path Resource Contention report detected an unknown resource type in a 68 record.

System action: The record is ignored and processing continues.

User response: Contact your IBM representative.

IPI0402E **MSC Report failed to process monitor record**

Explanation: The MSC report encountered a record that it could not process because of an unusual condition.

System action: The record is ignored and processing continues.

User response: Contact your IBM representative.

IPI0403E **Communication Report failed to process monitor record**

Explanation: The Communication report encountered a record that it could not process because of an unusual condition.

System action: The record is ignored and processing continues.

User response: Contact your IBM representative.

IPI0404E **Fast Path Analysis detected monitor record extension error**

Explanation: A Fast Path Analysis report detected a monitor record extension that it could not interpret.

System action: The record is ignored and processing continues.

User response: Contact your IBM representative.

IPI0405E **Monitor record extension not supported**

Explanation: IMS PA encountered a monitor record extension with an unknown DFSSLOG code.

System action: The extension is not processed by IMS PA, and processing is resumed at the next monitor record.

User response: Contact your IBM representative.

IPI0406I **Monitor constraints:** *xxxx xxxx*

Explanation: *xxxx xxxx* is a list of the monitor /TRACE parameters in effect when the monitor input file was created.

System action: Processing continues.

User response: None required.

IPI0422E **Command error **** IMS PA terminated due to previous errors. Command module detecting error is** *xxxxxxxx*

Explanation: IMS PA encountered an error in the Report Set or command input.

System action: Processing terminates.

User response: Message IPI0424E will have been issued previously. Correct the problem described in that message and resubmit the job.

IPI0423I **Command info ******** *reason*

Explanation: IMS PA encountered a condition in the Report Set or command input that caused an override, or a minor syntax error was ignored.

System action: Processing continues.

User response: None required.

IPI0424E **Command error ******* *reason*

Explanation: IMS PA encountered the specified error in the Report Set or command input, usually an unsupported command/operand or incorrect operand specification.

System action: Processing terminates.

User response: Check your Report Set specification, or correct the problem with the command input and resubmit the job. If the reason for the problem cannot be established, contact your IBM representative for help.

IPI0425E **Syntax error ******* *reason*

Explanation: IMS PA encountered the specified error in the construction of the command input, such as unmatched quotes or parentheses.

System action: Processing terminates.

User response: Correct the problem with the command input and resubmit the job. If the reason for the problem cannot be established, contact your IBM representative for help.

IPI0500I **Input file selection processing completed, RC=***xx*

Explanation: IMS PA has completed automated file selection processing, and issues the following return codes:

00 Processing completed successfully
04 Processing completed, warning message issued
08 Processing failed, error message issued
16 Operand specification error

System action: If the return code is 0 or 4, automated

file selection completed successfully, and the IMS PA report JCL has been submitted. If the return code is 8 or 16, automated file selection has failed. Previous error messages explain the reason for the error.

User response: None required. If the return code is 8 or 16, respond to the previous message.

IPI0501E FROM operand not specified

Explanation: The automated file selection utility FROM time operand was not specified, but is required.

System action: Automated file selection processing terminates.

User response: Ensure the FROM operand is specified in the command input, then resubmit the job.

IPI0502E TO operand not specified

Explanation: The automated file selection utility TO time operand was not specified, but is required.

System action: Automated file selection processing terminates.

User response: Ensure the TO operand is specified in the command input, then resubmit the job.

IPI0503E Duplicate IMS subsystem ID specified, IMSID=*ssss*

Explanation: The automated file selection utility detected an IMSID operand with a duplicate subsystem ID. A subsystem ID can only be specified once in the input.

System action: Automated file selection processing terminates.

User response: Correct the duplicated subsystem ID specification, then resubmit the job.

IPI0504E Operand specified at column *xx* is invalid, *"yyyyyyyy"*

Explanation: The automated file selection utility encountered an invalid operand starting at column *xx*. *yyyyyyyy* is the first 8 characters of the invalid operand.

System action: Automated file selection processing terminates.

User response: Remove or correct the invalid operand, then resubmit the job.

IPI0505E IMSID operand has invalid character at column *xx*

Explanation: The automated file selection utility encountered an invalid character in the IMSID operand specification starting at column *xx*.

System action: Automated file selection processing terminates.

User response: Correct the IMSID specification, then resubmit the job.

IPI0506E *xxxxxxxx* operand has invalid syntax

Explanation: The automated file selection utility detected that the specified operand had a syntax error.

System action: Automated file selection processing terminates.

User response: Correct the syntax error, then resubmit the job.

IPI0507E Date specified in *xxxxxxxx* operand invalid, RSN=*nnn***

Explanation: The automated file selection utility has found an invalid date specified in the *xxxxxxxx* operand, and issues one of the following reason codes:

001 Date specification is wrong length
002 Year specification is zero or wrong length
003 Ordinal day specification is zero or wrong length
004 Hour specification is zero or wrong length
005 Minute specification is invalid
006 Second specification is zero or wrong length
007 Fraction of second specification is wrong length
008 Month is not between one (1) and twelve (12)
009 Day specification is zero or wrong length
010 Relative date exceeded 9999 days

System action: Automated file selection processing terminates.

User response: Correct the date specification, then resubmit the job.

IPI0508E IMSID operand not specified

Explanation: The automated file selection utility requires at least one IMSID operand to be specified.

System action: Automated file selection processing terminates.

User response: Specify the IMS subsystem name in the IMSID operand, then resubmit the job.

IPI0509E Start time of first SLDS not found in RECON data set, SSID=*xxxxxxxx*

Explanation: The automated file selection utility processing could not determine the start time of the first SLDS record. The DBRC routine failed to return the start time. The message can be issued for the following reasons:

- There are no SLDS records in the RECON data sets.
- There is a problem with the RECON data sets.
- There is a problem with DBRC.

System action: Automated file selection processing terminates.

User response: Verify that the RECON data sets contain SLDS records for the requested IMS subsystem. Otherwise, contact your IBM representative for help.

IPI0510E **End time of first SLDS not found in RECON data set, SSID=***xxxxxxxx*

Explanation: The automated file selection utility processing could not determine the end time of the first SLDS record. The DBRC routine failed to return the start time. The message can be issued for the following reasons:
- There are no SLDS records in the RECON data sets.
- There is a problem with the RECON data sets.
- There is a problem with DBRC.

System action: Automated file selection processing terminates.

User response: Verify that the RECON data sets contain SLDS records for the requested IMS subsystem. Otherwise, contact your IBM representative for help.

IPI0511E **Start time of last SLDS not found in RECON data set, SSID=***xxxxxxxx*

Explanation: The automated file selection utility processing could not determine the start time of the last SLDS record. The DBRC routine failed to return the start time. The message can be issued for the following reasons:
- There are no SLDS records in the RECON data sets.
- There is a problem with the RECON data sets.
- There is a problem with DBRC.

System action: Automated file selection processing terminates.

User response: Verify that the RECON data sets contain SLDS records for the requested IMS subsystem. Otherwise, contact your IBM representative for help.

IPI0512E **End time of last SLDS not found in RECON data set, SSID=***xxxxxxxx*

Explanation: The automated file selection utility processing could not determine the end time of the last SLDS record. The DBRC routine failed to return the start time. The message can be issued for the following reasons:
- There are no SLDS records in the RECON data sets.
- There is a problem with the RECON data sets.
- There is a problem with DBRC.

System action: Automated file selection processing terminates.

User response: Verify that the RECON data sets contain SLDS records for the requested IMS subsystem. Otherwise, contact your IBM representative for help.

IPI0513E **No Log files for the required time range are available, SSID=***xxxxxxxx*

Explanation: The automated file selection utility detected that there were no SLDS records in the RECON data set within the specified time range for the subsystem.

System action: Automated file selection processing terminates.

User response: Correct the reporting time range, then resubmit the job.

IPI0514W **Log files not available for the complete time range, report period truncated, SSID=***xxxxxxxx*

Explanation: The automated file selection utility detected that the SLDS records in the RECON data set for the subsystem only partially cover the required date range. The report interval is truncated.

System action: Automated file selection processing continues.

User response: If reporting is required for the entire date/time range, ensure that SLDS records for that range are available in the RECON data set, then resubmit the job.

IPI0515E **DBRC Utility (DSPURX00) failed to return the LOG variable**

Explanation: The DBRC routine did not return the LOG variable in the skeleton.

System action: Automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0516E **DBRC Utility (DSPURX00) ATTACH error, RC=***xx*

Explanation: The DBRC routine received a bad return code from the ATTACH macro.

System action: Automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0517E **RDJFCB error for DDname** *dddddddd,* **RC=***xx*

Explanation: The automated file selection utility received a bad return code from the RDJFCB macro for DDname *dddddddd.*

System action: Automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0518E DDname *xxxxxxxx* not specified in JCL

Explanation: The automated file selection utility DDname *xxxxxxxx* was not specified in the JCL, but is required.

System action: Automated file selection processing terminates.

User response: Ensure the DDname *xxxxxxxx* is specified in the JCL, then resubmit the job.

IPI0519E DBRC Utility (DSPURX00) Skeleton generation failed, LOG FROM time expected

Explanation: The automated file selection utility has found output from the DBRC routine in the wrong sequence or missing.

System action: Automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0520E DBRC Utility (DSPURX00) Skeleton generation failed, LOG TO time expected

Explanation: The automated file selection utility has found output from the DBRC routine in the wrong sequence or missing.

System action: Automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0521E DBRC Utility (DSPURX00) has failed, RC=*xx*

Explanation: The DBRC routine has failed to return SLDS information to the automated file selection utility. The SYSPRINT output file contains run information, including DBRC error messages to further explain the problem.

System action: Automated file selection processing terminates.

User response: Check the output from DBRC utility in the SYSPRINT output file. If you cannot resolve the problem, contact your IBM representative for help.

IPI0522S DBRC Utility (DSPURX00) has abended, CODE=*xxxx*

Explanation: The automated file selection utility has detected an abend in the DBRC routine. The SYSPRINT output file contains run information, including DBRC error messages to further explain the problem.

System action: IMS PA processing terminates.

User response: Check the output from DBRC routine in the SYSPRINT output file. If the abend code is S806, verify the RESLIB specified and that the DBRC routine is available in the RESLIB. If you cannot resolve the problem, contact your IBM representative for help.

IPI0523E OPEN failed for DDname *xxxxxxxx*, RC=*xx*

Explanation: The automated file selection utility received a bad return code from the OPEN SVC when opening the specified DDname.

System action: Automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0524E IMSID operand exceeds maximum length (4)

Explanation: The automated file selection utility has detected that the IMS subsystem ID specification in the IMSID operand is longer than the maximum of four characters.

System action: Automated file selection processing terminates.

User response: Correct the IMSID operand, then resubmit the job.

IPI0525E TO time is not greater than FROM time

Explanation: The automated file selection utility has detected that the TO time specified is not greater than the FROM time.

System action: Automated file selection processing terminates.

User response: Correct the FROM and TO times, then resubmit the job.

IPI0526E IMS release *xxx* is not supported

Explanation: The automated file selection utility has detected an unsupported release of IMS specified in the VRM operand. IMS PA supports IMS releases 121, 131, 141, and 151.

System action: Automated file selection processing terminates.

User response: Correct the VRM operand, then resubmit the job.

IPI0527E **Date format is invalid**

Explanation: The automated file selection utility encountered a date that did not adhere to the required format. Date must be a valid calendar date in the format yyyy-mm-dd, or a relative date such as 0, -1, -2 representing today, yesterday, and so on.

System action: Automated file selection processing terminates.

User response: Correct the date format, then resubmit the job.

IPI0528E **Dynamic Allocation failed, DDname** *ddddddd*, **SSID=***ssssssss*, **RC=***xx*/**EC=***eeee*/**IC=***iiii*

Explanation: The automated file selection utility has failed to allocate the specified DDname. The error and information codes explain the cause of the problem.

System action: Automated file selection processing terminates.

User response: If you cannot correct the problem, then contact your IBM representative for help.

IPI0529E **RECON specification error; RECON1 and RECON2 is the minimum specification**

Explanation: The automated file selection utility detected an error in the RECON data set specification. At least two RECON data sets, RECON1 and RECON2, must be specified.

System action: Automated file selection processing terminates.

User response: Specify at least two RECON data sets, then resubmit the job.

IPI0530E **BLDL failed for** *xxxx* **MDA Members, RC=***xx*/**Reas=***yy*

Explanation: The automated file selection utility received a bad return code from the BLDL macro.

System action: Automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0531E **LOAD failed for** *xxxx* **MDA member** *mmmmmmmm*, **ABEND=***aaaa-rr*

Explanation: The automated file selection utility failed to load an MDA member. The ABEND code explains the reason for the failure. This abend code could indicate:

- The job region size is too small
- MDA member has an I/O error

System action: Automated file selection processing terminates.

User response: Check the abend code, and if possible, correct the problem. Otherwise, contact your IBM representative for help.

IPI0532E *xxxx* **RECON MDA member** *mmmmmmmm* **has invalid format**

Explanation: The automated file selection utility detected the MDA member for the specified RECON is not in MDA format.

System action: Automated file selection processing terminates.

User response: Verify that RECON MDA member has been generated correctly. Otherwise, contact your IBM representative for help.

IPI0533E **Specified** *xxxx* **RECON data sets do not exactly match RECON MDA members**

Explanation: The automated file selection utility detected that the explicitly specified RECON data sets do not exactly match the RECON MDA members. When the RECON data sets are explicitly specified, the automated file selection utility also checks the RECON MDA members. If at least one RECON MDA member is detected, then the specified RECON data set names must exactly match the RECON MDA members. This ensures that the DBRC RECON data sets are not corrupted by the DBRC API routine DSPAPI00.

System action: Automated file selection processing terminates.

User response: Correct the RECON data sets specification, then resubmit the job.

IPI0534E **Operand** *xxxxxxxx* **specified more than once**

Explanation: The automated file selection utility detected that the specified operand was duplicated for the subsystem. Each operand can only be specified once per subsystem.

System action: Automated file selection processing terminates.

User response: Correct the duplicated operand specification, then resubmit the job.

IPI0536E **Data set name is longer than 44 characters**

Explanation: The automated file selection utility has detected a data set name longer than 44 characters.

System action: Automated file selection processing terminates.

User response: Correct the data set name specification, then resubmit the job.

IPI0537E **IMS subsystem** *ssss* **has no VRM operand**

Explanation: The automated file selection utility requires that each IMS subsystem has a VRM operand to specify the release of the subsystem, or that it can be determined from the RESLIB using DFSVC000.

System action: Automated file selection processing terminates.

User response: Ensure each IMS subsystem has a VRM operand specified.

Either specify the IMS version in the JCL PARM specification as `'V`*nnn*`'`, where *nnn* is either 121, 131, 141, or 151, or add the IMS RESLIB data set to the STEPLIB concatenation.

Check that the IMS PA load library was specified correctly. This library is specified in the **IMS PA Load Library** option on the IMS PA Settings panel, and is used as a STEPLIB library at report submit time. See "IMS PA Settings" on page 67.

Correct the entries, then resubmit the job. If the problem persists, contact your IBM representative for help.

IPI0539E **Dynamic Deallocation failed, DDname=***dddddddd*, **SSID=***ssssssss*, **RC=***xx*/**EC=***eeee*/**IC=***iiii*

Explanation: The automated file selection utility has failed to deallocate the specified DDname. The error and information codes explain the cause of the problem.

System action: Automated file selection processing terminates.

User response: If you cannot correct the problem, then contact your IBM representative for help.

IPI0540E **LOCATE failed for** *xxxx* **Log data set, RC=***xx*/**DSN=***dddddddd*

Explanation: The automated file selection utility could not locate the catalog entry for the specified Log data set.

IMS PA requires the device type (UNIT) information of each Log data set when using shared queue merge processing. IMS PA uses the catalog when UNIT information is not available in the RECON.

System action: Automated file selection processing terminates.

User response: Either catalog the Log data set or use DBRC utilities to update UNIT and VOLSER information in the RECON.

IPI0541W *xxxx* **Log data set UNIT information is incomplete, DSN=***dddddddd*

Explanation: The automated file selection utility has detected that the specified Log data set has VOLSER information in the RECON, but UNIT information was not available.

System action: Automated file selection processing terminates.

User response: Use DBRC utilities to update the UNIT information in the RECON.

IPI0542E *xxxx* **Log data set has unsupported UNIT type, DSN=***datasetname*

Explanation: The automated file selection utility has detected that the specified Log data set is not eligible as it is not defined as either a TAPE or DASD device on this processor.

System action: Automated file selection processing terminates.

User response: Move the log data set to an eligible device or exclude the log data set.

IPI0543E *xxxx* **LOG data set is not cataloged, DSN=***dddddddd*

Explanation: The automated file selection utility failed to locate the catalog entry for the specified Log data set. IMS PA requires the UNIT information from the catalog if this information is not available from the RECON.

System action: Automated file selection processing terminates.

User response: Either catalog the LOG data set or use DBRC utilities to update unit information in your RECON data set.

IPI0544E *xxxx* **Log data set has more than 255 volumes, DSN=***dddddddd*

Explanation: The automated file selection utility has detected that the specified Log data set has more than 255 volumes. IMS PA does not support more than 255 volumes per Log data set.

System action: Automated file selection processing terminates.

User response: The automated file selection utility cannot be used for this Log file.

IPI0545E No input files were eligible for processing

Explanation: The automated file selection utility has found no SLDS log data sets or IMS Connect Extensions journal data sets to process for one of the following reasons:

- No IMS subsystems were specified.
- No Log data sets are available for the specified time period.
- DBRC failed to return Log data set information from the RECON.
- The IMS Connect Extensions definitions data set contained no eligible journals.

A previous message will explain the reason for the error.

System action: Automated file selection processing terminates.

User response: Correct the problem, then resubmit the job.

IPI0546E IPISMQW1 Merge Work File DD statement not found in Report JCL skeleton

Explanation: The IMS PA automated file selection utility could not find the IPISMQW1 DD statement in the Report JCL skeleton.

IMS PA requires merge work files for shared queue processing. When insufficient tape units are available to concurrently process the log input from all subsystems, IMS PA requires merge work files.

System action: IMS PA automated file selection processing terminates.

User response: Specify IPISMQW1 DD statement in the Report JCL skeleton, then resubmit the job.

IPI0547I DBRC Utility (DSPURX00) completed, RC=*xx*, **SSID=***ssssssss*, **FROM=***ffffffff*, **TO=***tttttttt*

Explanation: The automated file selection utility has successfully invoked the DBRC routine. When RC=0, DBRC has returned SLDS entries for the specified time range. When RC=4, DBRC could not find any SLDS entries for the specified time range. In this case, IMS PA will re-invoke DBRC with a modified time range to retrieve the first required SLDS entry.

System action: Automated file selection processing continues.

User response: None required if RC=0 or 4. When RC=12, check that the RECON data set is at the same IMS level as the library that contains the DBRC routine (usually specified by the RESLIB parameter).

IPI0548I Report JCL has been submitted, Jobname=*jjjjjjjj*, **Jobno.=***nnnn*

Explanation: The automated file selection utility has submitted the report/extract JCL. The job name and job number are specified.

System action: Automated file selection processing continues.

User response: None required.

IPI0549E CAT operand must be YES or NO

Explanation: The automated file selection utility detected that the CAT operand was not specified as YES (SLDS data sets are cataloged) or NO (SLDS data sets are not cataloged).

System action: Automated file selection processing terminates.

User response: Correct the CAT operand, then resubmit the job. The dialog generates this operand from **Log Data Sets are Cataloged** on the Log Input - IMS Subsystem panel.

IPI0550E SSID operand exceeds maximum length (8)

Explanation: The SSID operand is longer than the maximum allowed.

System action: Automated file selection processing terminates.

User response: Correct the SSID operand, then resubmit the job.

IPI0551E SSID operand has invalid character at column *cc*

Explanation: The SSID operand contains invalid characters.

System action: Automated file selection processing terminates.

User response: Correct the SSID operand, then resubmit the job.

IPI0552E SLDS operand must be SEC or PRI

Explanation: The automated file selection utility SLDS operand was incorrectly specified.

System action: Automated file selection processing terminates.

User response: Ensure the OLDS operand is specified as SEC or PRI, then resubmit the job.

IPI0553E **More than 1035 log files required for SSID=***ssssssss*

Explanation: The FROM and TO date range selected has resulted in the selection of more than the maximum allowed number of log data sets for this subsystem.

System action: Automated file selection processing terminates.

User response: Reduce the FROM, TO time range, then resubmit the job.

IPI0555E *xxxxxxxx* **VOLSER name is too long. DSN=***datasetname***, VOLSER=***vvvvvvvvvv*

Explanation: The VOLSER specified for the data set is greater than 6 characters.

System action: Automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0556E **IMS DBRC API module DSPAPI00 not found**

Explanation: The DBRC API module DSPAPI00 was not found in the RESLIB specified. If the RESLIB was not specified, then the DSPAPI00 module was not found in the STEPLIB or JOBLIB concatenation. Message IPI0558I follows.

System action: Automated file selection processing continues.

User response: None required.

IPI0557I **The RECON data set has not been upgraded, SSID=***ssssssss*

Explanation: The RECON data sets have not been upgraded to the format required by the IMS version specified by the RESLIB parameter. Message IPI0558I follows.

System action: Automated file selection processing continues.

User response: None required.

IPI0558I **The log data sets will be located using DSPURX00**

Explanation: This message will always come after message IPI0556E or IPI0557I. For IMS V9 or later, the log data sets will be located using the DBRC API routine DSPAPI00.

System action: Automated file selection processing continues.

User response: None required.

IPI0559I **DBRC API (DSPAPI00) completed, RC=***rc***, SSID=***ssssssss***, FROM=***fromdate***, TO=***todate***

Explanation: IMS PA has completed DSPAPI log selection processing, and issued the following return codes:

00 Processing completed successfully
04 Processing completed, warning message issued
08 Processing failed, error message issued
16 Operand specification error

System action: If the return code is 0 or 4, automated file selection completed successfully, and the IMS PA report JCL has been submitted. If the return code is 8 or 16, automated file selection has failed. Previous error messages explain the reason for the error.

User response: None required.

IPI0560E **OLDS operand must be YES or NO**

Explanation: The automated file selection utility OLDS operand was incorrectly specified.

System action: Automated file selection processing terminates.

User response: Ensure the OLDS operand is specified as YES or NO, then resubmit the job.

IPI0561E **DBRC API interface module has abended, CODE=***xxxxx*

Explanation: The automated file selection API interface has detected an ABEND in the DBRC API interface module IPIDBRCA. The JESMSGLG output file contains the summary ABEND information.

System action: Automated file selection processing terminates.

User response: If you cannot resolve the problem, contact your IBM representative for help.

IPI0562E **No IMS Log files were eligible for processing**

Explanation: IMS logs and IMS Connect Extensions journal data sets were requested for this run, however the automated file selection utility did not find any IMS systems with SLDS log data sets to process for one of the following reasons:

- No Log data sets are available for the specified time period.
- DBRC failed to return Log data set information from the RECON.

A previous message will explain the reason for the error.

System action: Automated file selection processing terminates.

User response: Correct the problem, then resubmit the job.

IPI0563E **No CEX journals were eligible for processing**

Explanation: IMS logs and IMS Connect Extensions journals were requested for this run, however the automated journal file selection utility did not find any IMS Connect systems with journal data sets to process for one of the following reasons:

- No journals are available for the specified time period.
- The IMS Connect Extensions definitions data set contained no eligible journals.

A previous message will explain the reason for the error.

System action: Automated file selection processing terminates.

User response: Correct the problem, then resubmit the job.

IPI0564E **No CEX journals were eligible for processing**

Explanation: The automated journal file selection utility did not find any IMS Connect Extensions journal data sets to process for one of the following reasons:

- No journals are available for the specified time period.
- The IMS Connect Extensions definitions data set contained no eligible journals.

A previous message will explain the reason for the error.

System action: Automated file selection processing terminates.

User response: Correct the problem, then resubmit the job.

IPI0565E *xxxxxxxx* **operand is blank**

Explanation: IMSID or HWSID has not been specified.

System action: Automated file selection processing terminates.

User response: Correct the IMSID or HWSID operand, then resubmit the job.

IPI0566E **Authorization failed: IMSID=***xxxx*, **IMSPLEX=***xxxxxx*

Explanation: The authorization exit IPIUAUTH disallowed the use of the IMSPLEX name for the IMS subsystem.

System action: Automated file selection processing terminates.

User response: Correct the IMSPLEX specification, then resubmit the job. If the IMSPLEX specification is correct and the problem still occurs, then the authorization exit needs updating. See SIPISAMP members IPIU002 and IPIUAUTH for more details.

IPI0578W **Timezone for HWSID=***xxxxxxxx* **is zero and local timezone is non-zero**

Explanation: The timezone offset in the IMS Connect Extensions definitions data set is zero and the local system timezone (CVTLDTO) is not.

System action: Automated file selection processing continues.

User response: If this situation is unexpected, check that the corequisite IMS Connect Extensions APAR has been applied.

IPI0579I *xxxxxxxx* **Journals selected:** *xxxxxx*

Explanation: The IMS Connect journal file selection utility selected *xxxxxx* journals, archive or active.

System action: Automated file selection processing continues.

User response: None required.

IPI0580E **IMS Connect Extensions service failed, RC=***rc*

Explanation: The IMS Connect Journal File Selection utility was unable to initialize its IMS Connect Extensions services environment.

System action: Automated file selection processing terminates.

User response: See the job log for the reason for failure and contact an IBM representative for help.

IPI0581E **CEX Definitions Data Set access failed; DDname CEXDEF missing or invalid**

Explanation: The specified IMS Connect Extensions definitions data set is invalid or the required DD CEXDEF is missing from the JCL.

System action: Automated file selection processing terminates.

User response: Specify a valid IMS Connect Extensions definitions data set and resubmit the job.

IPI0582E **No journal data sets found for HWSID=***hhhhhhhh* **in the CEX Definitions Data Set**

Explanation: Either there are no archive records in the IMS Connect Extensions definitions data set for this

HWSID, or this HWSID does not exist in the IMS Connect Extensions definitions data set.

System action: Automated file selection processing terminates.

User response: Correct the HWSID and resubmit the job.

IPI0583E CEX Definitions Data Set access failed

Explanation: The IMS Connect Journal File Selection utility could not use the IMS Connect Extensions definitions data set.

System action: Automated file selection processing terminates.

User response: Specify a valid IMS Connect Extensions definitions data set and resubmit the job.

IPI0584W CEX Journals not available for the complete time range, report period truncated, HWSID=*hhhhhhhh*

Explanation: The IMS Connect Journal File Selection utility could not locate journal data sets that cover the entire requested reporting time range.

System action: Reporting continues with only partial coverage of the requested reporting time range.

User response: None required.

IPI0585E Duplicate CEX subsystem ID specified, HWSID=*hhhhhhhh*

Explanation: The automated file selection utility detected a HWSID operand with a duplicate ID. An ID can only be specified once in the input.

System action: IMSPA automated file selection processing terminates.

User response: Correct the duplicated HWSID specification, then resubmit the job.

IPI0586E HWSID operand exceeds maximum length (8)

Explanation: The HWSID operand is longer than the maximum allowed.

System action: Automated file selection processing terminates.

User response: Correct the HWSID operand, then resubmit the job.

IPI0587E DSPAPI Error, FUNC=*function***, RC=***rc***, RSN=X'***reasoncode***', SSID=***ssssssss*

Explanation: Automated file selection utility error. An unexpected return code and reason code were returned from the IMS DBRC API call. See DBRC Application Programming Interface (API) Reference in the DBRC Guide and Reference for a detailed explanation of the reason code.

System action: Automated file selection processing terminates.

User response: If the RECON data sets that you want to use belong to an IMSplex:

- Ensure that you have correctly specified the name of the IMSplex in the PARM parameter of the EXEC statement for the automated file selection utility program. See "Preparing for DBRC Log Selection" on page 199.
- Ensure that the structured call interface (SCI) address space is running.

Otherwise, contact your IBM representative for help.

IPI0588E DSPAPI Error, *xxxx* data returned does not match the requested ID, Requested=*rrrr*, Returned=*tttt*

Explanation: Unexpected data was returned from the IMS DBRC API call. Possible data corruption.

System action: automated file selection processing terminates.

User response: Automated file selection utility error. Contact your IBM representative for help.

IPI0589I CEX *xxxxxxxx* Journal selection completed, RC=*rc*, HWSID=*hhhhhhhh*, FROM=*fromdate*, TO=*todate*

Explanation: IMS Connect Journal File Selection processing completed, and issued one of the following return codes:

00 Processing completed successfully
04 Processing completed, warning message issued
08 Processing failed, error message issued
16 Operand specification error

System action: If the return code is 0 or 4, IMS Connect Journal File Selection completed successfully, and the report JCL has been submitted. If the return code is 8 or 16, IMS Connect Journal File Selection has failed. Previous error messages explain the reason for the error.

User response: None required.

IPI0600I *xxxxxxxxxx* not produced, no data available

Explanation: The specified Log report was not produced because no Log data was available for one of the following reasons:

- Log data was not available in the requested reporting time period
- The Log file did not contain the necessary Log records to build the report

System action: The specified Log report is not produced, processing continues.

User response: Validate the log input file by ensuring that it contains data for the requested reporting time period and the records required to build the report.

IPI0601E Report File *xxxxxxxx* Dynamic Allocation failed

Explanation: The specified Report File failed Dynamic Allocation processing. The JES Job Log will contain the Dynamic Allocation information message.

System action: The reports that require the Report File are not produced. Processing continues.

User response: From the dynamic allocation information message, attempt to resolve the problem. Alternatively, insert a DD statement into the JCL for the report file name in error. This will cause IMS PA to bypass dynamic allocation of the report file. Otherwise, contact your IBM representative for help.

IPI0700I Input file *ddname* processing started

Explanation: IMS PA has started to process data in the specified IMS Connect Extensions journal data set.

System action: Reporting continues.

User response: None required.

IPI0701I Connect record processing started

Explanation: IMS PA Connect reporting has started because the requested start date/time has been reached.

System action: Reporting continues.

User response: None required.

IPI0702I Connect record processing ended

Explanation: IMS PA Connect reporting has stopped because the requested end date/time has been reached.

System action: Reporting stops.

User response: None required.

IPI0703I Input file *ddname* processing ended

Explanation: IMS PA has reached end-of-file for the specified IMS Connect Extensions journal data set.

System action: IMS PA continues reporting against the next IMS Connect Extensions journal data set until all journals are processed.

User response: None required.

IPI0710I Inflight file processing ended, records=*nnnnnnnnnnn*

Explanation: IMS PA has completed processing the inflight data set. The record count is the number of records read from the inflight data set (the outflight data set from the previous run).

System action: IMS PA continues processing the IMS Connect Extensions journals. Reporting continues.

User response: None required.

IPI0711E Unable to load Inflight file, processing terminated

Explanation: IMS PA has been unable to store all inflight records in virtual storage.

System action: IMS PA terminates.

User response: Increase REGION= size and rerun the job. If this fails, contact your IBM representative for help.

IPI0712I Invalid record length, Inflight file processing abandoned

Explanation: IMS PA has determined that the inflight record length is incorrect.

System action: IMS PA ignores the inflight file and continues processing the IMS Connect Extensions journals. Reporting continues.

User response: Check that the inflight file specification is correct.

IPI0720I Outflight file processing ended, records=*nnnnnnnnnnn*

Explanation: IMS PA has finished creating the outflight data set. The record count is the number of records written to the outflight data set (the inflight data set for the next run).

System action: Reporting stops normally.

User response: None required.

IPI0750I Input file processing started

Explanation: IMS PA has started to process data in the specified OMEGAMON TRF file, DDname TRFIN.

System action: Reporting continues.

User response: None required.

IPI0751I TRF record processing started

Explanation: IMS PA TRF reporting has started because the requested start date/time has been reached.

System action: Reporting continues.

User response: None required.

IPI0752I TRF record processing ended

Explanation: IMS PA TRF reporting has stopped because the requested end date/time has been reached.

System action: Reporting stops.

User response: None required.

IPI0753I Input file processing ended

Explanation: IMS PA has reached end-of-file for the specified OMEGAMON TRF file, DDname TRFIN.

System action: IMS PA continues reporting against the next OMEGAMON TRF file until all files are processed.

User response: None required.

IPI0754E Invalid MSG record length

Explanation: The length of the OMEGAMON TRF MSG record was invalid.

System action: Processing continues.

User response: This could be an IMS problem. Contact your IBM representative for help.

IPI0780I Input file *ddname* processing started

Explanation: IMS PA has started to process data in the specified OMEGAMON ATF journal, DDname ATFINnnn.

System action: Reporting continues.

User response: None required.

IPI0781I ATF record processing started

Explanation: IMS PA ATF reporting has started because the requested start date/time has been reached.

System action: Reporting continues.

User response: None required.

IPI0782I ATF record processing ended

Explanation: IMS PA ATF reporting has stopped because the requested end date/time has been reached.

System action: Reporting stops.

User response: None required.

IPI0783I Input file *ddname* processing ended

Explanation: IMS PA has reached end-of-file for the specified OMEGAMON ATF journal, DDname ATFINnnn.

System action: IMS PA continues reporting against the next OMEGAMON ATF journal until all journal data sets are processed.

User response: None required.

IPI0784E Unsupported version, OMEGAMON ATF IF3 required

Explanation: IMS PA ATF reporting requires the statistics record enhancements applied by OMEGAMON ATF IF3 APAR OA36278.

System action: Processing stops.

User response: Install OMEGAMON for IMS, V4.2 ATF APAR OA36278: Interim Feature 3 (IF3).

IPI0790I Inflight file processing ended, records=*nnnnnnnnnnn*

Explanation: IMS PA has completed processing the inflight data set. The record count is the number of records read from the inflight data set (the outflight data set from the previous run).

System action: IMS PA continues processing the ATF journals. Reporting continues.

User response: None required.

IPI0791E Unable to load Inflight file, processing terminated

Explanation: IMS PA has been unable to store all inflight records in virtual storage.

System action: ATF reporting terminates.

User response: Increase REGION= size and rerun the job. If this fails, contact your IBM representative for help.

IPI0792I Invalid record length, Inflight file processing abandoned

Explanation: IMS PA has determined that the inflight record length is incorrect.

System action: IMS PA ignores the inflight file and continues processing the ATF journals. Reporting continues.

User response: Check that the inflight file specification is correct.

IPI0793I Outflight file processing ended, records=*nnnnnnnnnnn*

Explanation: IMS PA has finished creating the outflight data set. The record count is the number of records written to the outflight data set (the inflight data set for the next run).

System action: ATF reporting stops normally.

User response: None required.

IPI0800E **Number of Key fields exceed maximum of 8**

Explanation: The Summary report/extract field specification contains more than the maximum number of key fields allowed in a Form.

System action: Processing terminates.

User response: Reduce the number of key fields to no more than 8 and rerun the Summary report/extract.

IPI0801E **Key sequence error detected at field** *fieldname*

Explanation: At least 1 non-key field was specified before a key field in a Summary report field specification.

System action: Processing terminates.

User response: Ensure all key fields are defined before non-key fields.

IPI0802E **Key length exceeds 255 characters**

Explanation: The total length of all specified key fields exceeds the maximum of 255 characters.

System action: Processing terminates.

User response: Reduce the number of key fields to create a key whose combined length is less than or equal to 255 characters.

IPI0803I **No records were selected from input for processing**

Explanation: None of the input records were eligible for processing based on the Report Interval, Selection Criteria, or Completion Level specified.

System action: Processing terminates.

User response: Check START and STOP times, and other selection criteria, are consistent with input data sets.

IPI0804E **Error opening Extract output file**

Explanation: IMS PA was unable to open the output extract file for processing.

System action: Processing terminates.

User response: Look at any system messages that may be related to this error.

IPI1003E **CONVTOD macro error; Ret=***xx*

Explanation: IMS PA could not upgrade your old System Definitions because the CONVTOD macro failed.

System action: Upgrading of your old System Definitions is terminated but System Definition processing continues.

User response: Contact your IBM representative for help.

IPI1020E **Table Library not available; DDname=***xxxxxxxx*

Explanation: An IMS PA dialog module has detected that the specified DDname for the Table library was not allocated.

System action: Processing is terminated.

User response: Contact your IBM representative for help.

IPI1021E **System Definition Table for IMS PA** *xxxx* **has a format error**

Explanation: IMS PA determined that the Table containing your IMS System and file definitions is not in the correct format. The Systems Definition Table is a member in your Permanent ISPF Table Library, which is specified in your IMS PA Settings.

System action: Processing is terminated.

User response: With caution, you can delete member IPISDIN4 from your Permanent ISPF Table Library, then retry your request. Note that if you do this, you will lose your saved System Definitions and not be able to recover them. If the problem is occurring regularly, or you do not want to lose your saved System Definitions, then contact your IBM representative for help.

IPI1041E **Reason=***reason* **Member=***xxxxxxxx* **DSN=***dataset.name*

Explanation: IMS PA could not SAVE your currently active EDIT session. The reasons why your SAVE request may have failed are:

1. ABEND - Save request abended
2. PDS Directory Full - The PDS directory is full
3. BLDL or STOW error - Unsupported return code from BLDL/STOW SVC

System action: The SAVE request is aborted.

User response: For ABENDSx37 conditions, compress the data set or re-allocate the data set with a larger primary/secondary space allocation. For Directory Full or ABENDSB14-0000000C conditions, re-allocate the data set with a larger directory block allocation. For all other conditions, contact your IBM representative for help.

IPI2000I **IMS Performance Analyzer 4.4 DB2 Load Utility -** *ddmmmyyyy hh.mm.ss*

Explanation: IMS PA batch utility IPIUTILB commences processing. This utility loads records from a form-based Summary extract data set into a pre-defined DB2 table with the Resume option.

System action: Processing continues.

User response: None required.

IPI2003I **-** *parameter input*

Explanation: Print of the parameter card input.

System action: Processing continues.

User response: None required.

IPI2004I **-** *SQL error message*

Explanation: SQL error message.

System action: Refer to the DB2 SQL publication library.

User response: As recommended.

IPI2005I **- Records Read -** *nnnnnnnn*

Explanation: The number of input records read from the form-based extract data set.

System action: Processing continues.

User response: None required.

IPI2006I **- Records Inserted -** *nnnnnnnn*

Explanation: The number of input records read and inserted as new rows in the DB2 table.

System action: Processing continues.

User response: None required.

IPI2007I **- Records Updated -** *nnnnnnnn*

Explanation: The number of input records read which had duplicate keys and updated existing rows in the DB2 table.

System action: Processing continues.

User response: None required.

IPI2010E **- Required DDNAME not found, DDNAME=***ddname*

Explanation: A required DDname is missing from the JCL.

System action: Processing terminates.

User response: Add the DDNAME statement to the JCL and rerun the job.

IPI2011E **RDJFCB error for DDname** *ddname*, **RC=***rc*

Explanation: The IMS PA input file selection utility received a bad return code from the RDJFCB macro for the specified DDname.

System action: IMS PA input file selection processing terminates.

User response: This is an IMS PA input file selection utility error. Contact your IBM representative for help.

IPI2012E **OPEN failed for DDname** *ddname*, **RC=***rc*

Explanation: The IMS PA input file selection utility received a bad return code from the OPEN SVC when opening the specified DDname.

System action: IMS PA input file selection processing terminates.

User response: This is an IMS PA input file selection utility error. Contact your IBM representative for help.

IPI2013E **Unknown or misplaced keyword,** *xxxxxxx*

Explanation: The keyword is either unknown or out of place.

System action: Processing terminates after verifying all parameters.

User response: Correct the parameters and rerun the job.

IPI2014E **Duplicate parameter,** *xxxxxxx*

Explanation: The operand has been duplicated.

System action: Processing terminates after verifying all parameters.

User response: Correct the parameters and rerun the job.

IPI2015E **Invalid parameter syntax,** *xxxxxxx*

Explanation: The input parameters have an invalid syntax.

System action: Processing terminates after verifying all parameters.

User response: Correct the parameters and rerun the job.

IPI2016E **TRANCNT information is not available**

Explanation: TRANCNT has not been defined for this extract. TRANCNT is key data required for processing of the extracted data. It is required to be able to perform updates on other data within this extract.

System action: Processing terminates.

User response: Modify or define a new Form to include TRANCNT, then rerun the extract and export to DB2.

IPI5000I Input options specified:

Explanation: IMS Connect Journal File Selection utility input commands follow.

System action: Processing continues.

User response: None required.

IPI5001I Connect Archive Selection completed | failed, CC=*rc*

Explanation: Indicates the success or failure of IMS Connect Journal File Selection processing:

- For RC=0, journal file selection successfully completed submitting your report request.
- For RC=4, journal file selection successfully completed submitting your report request, but a warning message was issued.
- For RC greater than 4, the journal file selection utility issued an error message and did not proceed to submit your report request.

System action: Processing continues.

User response: If RC is not 00, then refer to the previous warning or error messages for the required action.

IPI5002I Selected Archive files range from *start date time* **to** *end date time*

Explanation: The IMS Connect Journal File Selection utility selected journal files in the specified date/time range.

System action: Processing continues.

User response: None required.

IPI5003I Connect Report JCL submitted, Jobname=*xxxxxxxx,* **JobID=***xxxxxxxx*

Explanation: The IMS Connect Journal File Selection utility submitted the specified job to run your report request.

System action: Processing continues.

User response: None required.

IPI5004E Invalid *xxxxxx* **operand specified**

Explanation: The specified operand is not a valid IMS Connect Extensions Journal File Selection utility command or operand.

System action: Processing stops.

User response: Correct the specified operand and resubmit the job.

IPI5005E Invalid Jobcard specified in IPISKEL input

Explanation: An invalid job card was specified in your IPISKEL DD report request skeleton.

System action: Processing stops.

User response: Correct the jobcard in the JCL or in IMS PA Settings in your Profile Options, then resubmit the job.

IPI5006E *xxxx* **has invalid syntax**

Explanation: The specified operand is incorrectly specified in the IMS Connect Extensions Journal File Selection utility input commands.

System action: Processing stops.

User response: Correct the specified operand and resubmit the job.

IPI5007E Invalid date or time specified in the *xxxx* **operand, Reason=***reason*

Explanation: The FROM/TO date or time was incorrectly specified. The allowed date formats are yyyy/mm/dd or 0,-1,... and the allowed time format is hh:mm:ss.th.

System action: Processing stops.

User response: Correct the specified date or time and resubmit the job.

IPI5008E Archive data set not cataloged, DSN=*datasetname*

Explanation: The specified data set defined in the IMS Connect Extensions definitions data set is not cataloged. This data set is required to satisfy your report request. The data set is deleted or cataloged on another system.

System action: Processing stops.

User response: If the data set is no longer available, then you cannot report against the required time range.

IPI5009E *xxxxx* **operand specified more than once**

Explanation: The specified operand was specified more than once in the IMS Connect Extensions Journal File Selection utility input commands.

System action: Processing stops.

User response: Remove the duplicate operand and resubmit the job.

IPI5010E IMS Connect Extensions service failed

Explanation: The IMS Connect Extensions Journal File Selection utility was unable to initialize its IMS Connect Extensions services environment.

System action: Processing stops.

User response: See the job log for the reason for failure and contact IBM.

IPI5011E Definitions Data Set access failed; DDname CEXDEF missing or invalid

Explanation: The specified IMS Connect Extensions definitions data set is invalid or the required DD CEXDEF is missing from the JCL.

System action: Processing stops.

User response: Specify a valid IMS Connect Extensions definitions data set and resubmit the job.

IPI5012E Definitions Data Set access failed

Explanation: The IMS Connect Extensions Journal File Selection utility could not use the IMS Connect Extensions definitions data set.

System action: Processing stops.

User response: Specify a valid IMS Connect Extensions definitions data set and resubmit the job.

IPI5013E No Archive files found for specified HWSID

Explanation: The required IMS Connect HWS system does not have any archive journal data sets defined. Journal data sets are created by IMS Connect Extensions.

System action: Processing stops.

User response: Verify that IMS Connect Extensions is collecting event data for this HWSID.

IPI5014E TO time is not greater than FROM time

Explanation: The TO date and time must be greater than the FROM date and time.

System action: Processing stops.

User response: Correct the FROM/TO specification and resubmit the job.

IPI5015E Unable to open file, DDname=*ddname*

Explanation: IMS PA was unable to open the file with the specified DDname.

System action: Processing stops.

User response: Correct the JCL and resubmit the job.

IPI5016E No Archive files found for required time range

Explanation: The IMS Connect Extensions Journal File Selection utility could not find any journal data sets (archive or active) for the required reporting time range.

System action: Processing stops.

User response: Verify that IMS Connect Extensions is collecting event data to meet your reporting requirements.

IPI5017W Archive files not available for the complete time range. Report period truncated.

Explanation: The IMS Connect Extensions Journal File Selection utility could not locate journal data sets (archive or active) that cover the entire requested reporting time range.

System action: Reporting continues with only partial coverage of the requested reporting time range.

User response: None required.

IPI5018E Required operand missing. HWSID, FROM and TO operands must be specified

Explanation: One or more of the required IMS Connect Journal File Selection utility operands is missing.

System action: Processing stops.

User response: Add missing operands and resubmit the job.

IPI5019E Specified HWSID is not defined in the Definitions Data Set

Explanation: The IMS Connect Journal File Selection utility could not locate the specified HWSID in the IMS Connect Extensions definitions data set. IMS Connect systems are defined in IMS Connect Extensions, not IMS PA.

System action: Processing stops.

User response: Correct the HWSID, or specify the correct IMS Connect Extensions definitions data set, and resubmit the job.

IPI9999E IMS PA internal failure, reason=*reason*

Explanation: IMS PA has detected an internal failure for the specified reason.

System action: Depending on the severity of the failure, processing may stop for the record, for the report, or entirely.

User response: This is an IMS PA error. Contact your IBM representative for help.

How to look up message explanations

You can use several methods to search for messages and codes.

Searching an information center

In the search box that is located in the top left toolbar of any Eclipse help system, such as the IBM Information Management Software for z/OS Solutions Information Center, enter the number of the message that you want to locate. For example, you can enter DFS1065A in the search field.

Use the following tips to help you improve your message searches:

- You can search for information on codes by entering the code; for example, enter -327.
- Enter the complete or partial message number. You can use the asterisk wildcard character (*) to represent multiple characters, and you can use the question mark wildcard character (?) to represent a single character.

The information center contains the latest message information for all of the information management products that are included in the information center.

Searching for messages on the Web

You can use any of the popular search engines that are available on the Web to search for message explanations. When you type the specific message number or code into the search engine, you will be presented with links to the message information in IBM information centers.

Using LookAt

LookAt is an online facility that you can use to look up explanations for most of the IBM messages you encounter, as well as for some system abends and codes. Using LookAt to find information is faster than a conventional search because in most cases LookAt goes directly to the message explanation.

You can use LookAt from the following locations to find IBM message explanations for z/OS elements and features, z/VM®, VSE/ESA, and Clusters for AIX® and Linux:

- The Internet. You can access IBM message explanations directly from the LookAt website at http://www.ibm.com/eserver/zseries/zos/bkserv/lookat/.
- Your z/OS TSO/E host system. You can install code on your z/OS or z/OS.e systems to access IBM message explanations, using LookAt from a TSO/E command line (for example, a TSO/E prompt, ISPF, or z/OS UNIX System Services running OMVS).
- Your Microsoft Windows workstation. You can install code to access IBM message explanations on the z/OS Collection (SK3T-4271) using LookAt from a Microsoft Windows command prompt (also known as the DOS command line).
- Your wireless handheld device. You can use the LookAt Mobile Edition with a handheld device that has wireless access and an Internet browser (for example, Internet Explorer for Pocket PCs, Blazer, or Eudora for Palm OS, or Opera for Linux handheld devices). Link to the LookAt Mobile Edition from the LookAt website.

You can obtain code to install LookAt on your host system or Microsoft Windows workstation from a disk on your z/OS Collection (SK3T-4271) or from the LookAt website (click **Download** and select the platform, release, collection, and location that suit your needs). More information is available in the LOOKAT.ME files available during the download process.

Chapter 31. Gathering diagnostic information

Before you report a problem with IMS Performance Analyzer to IBM Software Support, you need to gather the appropriate diagnostic information.

Procedure

Provide the following information for all IMS Performance Analyzer problems:

- A clear description of the problem and the steps that are required to re-create the problem
- All messages that were issued as a result of the problem
- Product release number and the number of the last program temporary fix (PTF) that was installed
- The version of DB2/IMS that you are using and the type and version of the operating system that you are using

Provide additional information based on the type of problem that you experienced:

For online abends, provide the following information

- A screen shot of the panel that you were using when the abend occurred
- The job log from the TSO session that encountered the abend
- The job log from the server
- A description of the task that you were doing before the abend occurred

For errors in batch processing, provide the following information

- The complete job log
- Print output
- Contents of input data sets that were used during the processing

Obtaining dumps

IMS PA normally executes in a STAE environment set up by IMS PA. This environment is useful for obtaining partial reports in case of error conditions, such as input data set I/O checks. However, if a programming error occurs, the STAE environment may mask the true abnormal termination condition encountered.

About this task

If IMS PA terminates with an error that requires you to contact your IBM representative for help, it may be possible to expedite problem identification and solution by rerunning the job with the STAE environment cancelled. See message "IPI0095E" on page 691.

Procedure

1. Specify the NOSTAE parameter on the EXEC statement of the JCL.
2. Include a SYSUDUMP DD statement in the JCL to capture the system dump in the case of an abend.

Example

For example:

```
//BUILDRS  EXEC PGM=IPIMAIN,PARM='Vnnn,NOSTAE'
           .
           .
           .
//SYSUDUMP DD  SYSOUT=*
```

Figure 323. Specifying NOSTAE and SYSUDUMP in the JCL

Obtaining problem diagnostics

To get more detailed problem diagnostics, specify an IPIDIAGS DD statement in your JCL.

About this task

Error messages associated with the processing of input records are not written at the time that the error is encountered. Instead, each error message is accumulated by message number, and written once at end of file, before the reports are written. These messages are identified by a message count preceding the message text, as shown in the following figure.

```
08Jun2018 11.27.50.88  IPI0003I Reporting stopped : Elapsed time is  1. 07.551.097
Msg Count=         12  IPI0074E IWAIT ignored, no IWAIT start or not in call
Msg Count=          5  IPI0076E ITask ID does not match expected, record ignored
08Jun2018 11.27.50.88  IPI0004I End of File signalled to Report Processors
```

Figure 324. Message counts

It is helpful to capture each error message and associated diagnostic information in a diagnostic DD. If the JCL contains an IPIDIAGS DD statement, the error message is written to the IPIDIAGS data set at the time of the error, along with the record number and dump of the record that caused the problem.

```
Record=        14        IPI0076E  ITask ID does not match expected, record ignored
 0000  002D0000 4E590000 B25DCD8C 112D6759  81000001 000001E0 0000C4C2 C4F0F0F0 . . . *
 0020  F0F14040 01000000 00000000 0E                                        . . . *
```

Figure 325. IPIDIAGS message and record dump

Procedure

To get more detailed problem diagnostics:

1. Specify an IPIDIAGS DD statement in the JCL.
2. Submit the job.
3. Review the contents of the IPIDIAGS data set in the job output.

Part 11. Reference

This part provides reference information about IMS PA. It provides a list of the various record types processed by IMS PA, contents of the sample library supplied with IMS PA, details about the macros for user-written programs, some SQL examples to help you get started analyzing extracts exported to DB2, and instructions on how to use the IMS Tools Knowledge Base for IMS PA reports.

Chapter 32. IMS Log records

The IMS log type consists of log codes for IMS log records. Not all log codes are applicable to all releases of IMS.

The log code of an IMS record matches the IMS log record type and, if applicable, subtype. For a list of IMS log record types and subtypes, see the information about IMS log records used to analyze IMS problems in *IMS Diagnosis*.

Notes for specific log codes:

CA01 IMS transaction index.

CA20 IMS Connect transaction index.

Chapter 33. Monitor records

IMS Performance Analyzer uses 1-byte hexadecimal codes to identify the monitor records that it processes.

Table 6. Monitor records processed by IMS PA

Record code (hex)	Description
01	System Configuration
02	BMP Scheduling start
03	BMP Scheduling end
04	BMP Termination start
05	BMP Termination end
06	IFP Scheduling start
07	IFP Scheduling end
08	IFP Termination start
09	IFP Termination end
10	MPP Scheduling start
11	MPP Scheduling end
12	Dependent Region start
13	MPP Termination start
14	BMP/MPP/IFP Scheduling IWAIT start
15	Scheduler IWAIT end
16	PSB Block Loader IWAIT start
17	PSB Block Loader IWAIT end
18	DMB Block Loader IWAIT start
19	DMB Block Loader IWAIT end
20	Storage IWAIT start
21	Storage IWAIT end
22	Database I/O IWAIT start
23	Database I/O IWAIT end
24	VSAM I/O IWAIT start
25	VSAM I/O IWAIT end
26	QMGR I/O IWAIT start
27	QMGR I/O IWAIT end
28	HSAM I/O IWAIT start
29	HSAM I/O IWAIT end
30	Format Buffer Pool IWAIT start
31	Format Buffer Pool IWAIT end
32	MFS Directory IWAIT start
33	MFS Directory IWAIT end
36	MFS Block IWAIT start
37	MFS Block IWAIT end
38	IFP Message IWAIT start
39	IFP Message IWAIT end
40	Communications start
41	Communications end
42	Transaction Originator
43	Fast Path Buffer Activities
44	MSC Message Enqueue
45	MSC Message Dequeue
46	TP Paging Request

Table 6. Monitor records processed by IMS PA (continued)

Record code (hex)	Description
47	BALG Dequeued
48	External Subsystem Call start
49	External Subsystem Call end
50	Checkpoint start
51	Checkpoint end
52	Write restart IWAIT start
53	Write restart IWAIT end
54	QMGR SNAPQ IWAIT start
55	QMGR SNAPQ IWAIT end
56	MSDB Write IWAIT
57	DEDB Read IWAIT
58	IRC10 start (FP Call)
59	IRC10 end (FP Call)
60	DL/I call start
61	DL/I call end
62	DLA start (DB)
63	DLA end (DB)
64	DLA start (Message)
65	DLA end (Message)
66	PI Enqueue IWAIT start
67	PI Enqueue IWAIT end
68	DEDB Lock IWAIT start
69	DEDB Lock IWAIT end
70	MFS Prefetch start
71	MFS Prefetch end
72	DEDB OTHREAD IWAIT
73	VSO CF Write IWAIT
74	PSB Block Loaded from 64-bit Storage Pool start
75	PSB Block Loaded from 64-bit Storage Pool end
76	DMB Block Loaded from 64-bit Storage Pool start
77	DMB Block Loaded from 64-bit Storage Pool end
78	Synchronous Callout start
79	Synchronous Callout end
80	Intent Failure
82	Pool Space Failure
83	FP Deadlock Detected
84	VSO Area Castout start
85	VSO Area Castout end
86	FF Deadlock Detected
87	OTHREAD Activities
88	VSO Preload start
89	VSO Preload end
90	Monitor start
91	Monitor end
94	VSO CF Read IWAIT
95	FP Lock Activity
98	User SLOG
AA	Pseudo End of File

Chapter 34. IMS Connect records

IMS Connect Extensions collects event records with details of incoming transaction requests as IMS Connect processes them.

Event records recorded by IMS Connect Extensions

Event records are collected continuously as messages are processed by IMS Connect. An event record consists of an event number and data associated with the event.

Event numbers can be X'00' - X'FF' (decimal 0 - 255) and the associated data varies depending on the event number. The event number is appended to the record prefix.

Connect status event records

The following table lists all single event records. The Collection level determines whether the event record is written to the Journal.

Table 7. Connect status event records

Code (Hex)	Code (Dec)	Event description	Collection level
00	00	Control record	0
01	01	IMS Connect region initialization	0
02	02	IMS Connect region has completed termination	0
03	03	A support task (TCB) has been created	1
04	04	A support task (TCB) is terminating	1
05	05	Begin INIT API	4
06	06	End INIT API	4
07	07	Begin Bind Socket	4
08	08	End Bind Socket	4
09	09	Listen on socket	4
0A	10	Begin Accept Socket	4
0B	11	End Accept Socket	3
0E	14	Begin Message Exit INIT	1
10	16	IMS datastore becomes available	0
11	17	IMS datastore becomes unavailable	0
12	18	An IMS TMEMBER joins the XCF group	0
13	19	An IMS TMEMBER leaves the XCF group	0
14	20	Begin SCI Registration	4
15	21	End SCI Registration	1
16	22	Begin SCI De-registration	4
17	23	End SCI De-registration	1
18	24	Recorder trace DCB has been opened	1

Table 7. Connect status event records (continued)

Code (Hex)	Code (Dec)	Event description	Collection level
19	25	Recorder trace DCB pre-close	1
1A	26	User message exit return from INIT	1
1B	27	User message exit return from TERM	1
1C	28	Begin Secure Environment Open	1
1D	29	End Secure Environment Open	1
20	32	Begin Secure Environment Close	1
21	33	End Secure Environment Close	1
22	34	Begin Local Port Setup	3
23	35	End Local Port Setup	3
24	36	Begin RRS Connect	1
25	37	End RRS Connect	1
26	38	List In-doubt Context	1
27	39	Begin RRS Disconnect	1
28	40	End RRS Disconnect	1
29	41	Begin ODBM Registration	1
2A	42	End ODBM Registration	1
2B	43	Begin ODBM De-registration	1
2C	44	End ODBM De-registration	1
2D	45	Datastore Status Update	1
2E	46	Return From Port Exit INIT Call	1
2F	47	Return From Port Exit TERM Call	1
30	48	Begin ODBM Routing Exit INIT	1
31	49	End ODBM Routing Exit INIT	1
32	50	Begin ODBM Routing Exit TERM	1
33	51	End ODBM Routing Exit TERM	1
34	52	XML Adapter INIT Call Begin	1
35	53	XML Adapter INIT Call End	1
36	54	XML Adapter TERM Call Begin	1
37	55	XML Adapter TERM Call End	1
38	56	OM Registration	1
39	57	OM Deregistration	1
A7	167	Internal Command Event	0

Workload-related event records

The following tables list all event records relating to message-related events, Open Database events, and IMS-to-IMS, and IMS-to-CICS TCP/IP communications.

Table 8. Workload-related event records

Code (Hex)	Code (Dec)	Event description	Collection level
0C	12	Begin Close Socket	4
0D	13	End Close Socket	3
3C	60	Prepare for socket read	2
3D	61	User message exit entered for READ, XMIT, EXER, or RXML	2
3E	62	User message exit return for READ, XMIT, EXER, or RXML	1
3F	63	Begin SAF security request	3
40	64	End SAF security request	3
41	65	Message sent to OTMA	2
42	66	Message received from OTMA	2
43	67	Message sent to SCI	2
44	68	Message received from SCI	2
45	69	OTMA Timeout	1
46	70	Deallocate Request	3
47	71	Session Error. This event is called when an unrecoverable error has been encountered and the session is being aborted	1
48	72	Trigger event. This is the end-of-frame event recorded by IMS Connect when a multi-event process has completed	2
49	73	Read socket	3
4A	74	Write socket	3
4B	75	Local Client Connect	3
4C	76	Local Message Send	3
4D	77	Local Message Receive	3
4E	78	Local Message Send-then-Receive	3
4F	79	Local Disconnect	3
50	80	Begin Create Context	4
51	81	End Create Context	3
52	82	Begin RRS Prepare	4
53	83	End RRS Prepare	3
54	84	Begin RRS Commit/Abort	4
55	85	End RRS Commit/Abort	3
56	86	Begin Secure Environment Select	3
57	87	End Secure Environment Select	3
58	88	Hold compensation queue	1
59	89	Port Edit Exit Called	2
5A	90	Port Edit Exit Returned	1
5B	91	DRDA® Command is Issued	2
5C	92	DRDA Command is Sent	2
5D	93	An Allocate PSB Command is Received	2
5E	94	An Allocate PSB Command is Sent	2

Table 8. Workload-related event records (continued)

Code (Hex)	Code (Dec)	Event description	Collection level
5F	95	A Deallocate PSB Command is Received	2
60	96	A Deallocate PSB Command is Sent	2
61	97	ODBM Routing Exit Entered	3
62	98	ODBM Routing Exit Returned	3
63	99	ODBM Security Exit Entered	3
64	100	ODBM Security Exit Returned	3
65	101	RRS Parent UR Token Creation Begins	3
66	102	RRS Parent UR Token Creation Ends	3
69	105	Message is Sent to ODBM	3
6A	106	Message is Received from ODBM	3
6B	107	RRS Delegate Commit Agent UR Begins	3
6C	108	RRS Delegate Commit Agent UR Ends	3
6D	109	XML Adapter CALL Begin	1
6E	110	XML Adapter CALL End	1
6F	111	XML Converter CALL Begin	1
70	112	XML Converter CALL End	1
71	113	Connected to Remote IMS Connect	3
72	114	Disconnected from Remote IMS Connect	3
73	115	Start Remote Thread for Partner ICON	3
74	116	Message Received for Remote ALTPCB	3
75	117	ALTPCB Message Sent to Remote Partner	3
76	118	ALTPCB Message Received from Remote Partner	3
77	119	Message Sent to OTMA for ALTPCB	3
78	120	MSC Message Received from MSC	3
79	121	MSC Message Sent to Partner IMS Connect	3
7A	122	MSC Message Received from Partner IMS Connect	3
7B	123	MSC Message Sent to MSC	3
7C	124	Connection to Partner IMS Connect Time-out	3
7D	125	Start of a session	3
7E	126	Trigger end of a session	3
80	128	IMS Performance Analyzer Automatic Trigger	1
81	129	IMS Performance Analyzer Exception Event	1
82	130	Event Collection Status	1

Table 9. Extended event records for event number 255

Code (Hex)	Code (Dec)	Extended event number and event description		Collection level
FF	255	**256**	Socket connected on RMTCICS	1
		257	Socket disconnected from RMTCICS	
		258	IMS Connect refreshed a cached RACF user ID after receiving a type 71 Event Notification Facility (ENF) notification	
		259	IMS Connect sent a health status report to Work Load Manager (WLM)	
		2050	Communication thread started for a RMTCICS connection	
		2051	ISC message received from IMS	
		2052	ISC message sent to IMS	
		2053	ISC message received on RMTCICS socket connection	
		2054	ISC message sent on RMTCICS socket connection	
		2055	ISC message received on CICSPORT socket connection	
		2056	ISC message sent on CICSPORT socket connection	

Recorder trace records

Recorder trace data produced by IMS Connect is converted to event record format by the IMS Connect Extensions Recorder trace utilities.

Table 10. Recorder trace event records produced by IMS Connect

Code (Hex)	Code (Dec)	Event description	Collection level
A0	160	HWS Recorder Base Section Trace	Not applicable
A1	161	HWS Recorder IPB Section Trace	Not applicable
A2	162	HWS Recorder OPB Section Trace	Not applicable

IMS Connect trace records

IMS Connect trace event records are produced when the Tracing Level has been set for the system.

Table 11. IMS Connect trace event records

Code (Hex)	Code (Dec)	Event description	Collection level
A3	163	Event Collection OTMA Trace	1
A4	164	Event Collection IRM Trace	1
A5	165	Event Recording RSM Message Trace	1
A6	166	Event Recording EXIT Output Message Trace	1

Table 11. IMS Connect trace event records (continued)

Code (Hex)	Code (Dec)	Event description	Collection level
A9	169	RXML Trace for XML Adapter	1
AA	170	ODBM trace record	1
AC	172	IMS Performance Analyzer Command and Response **1**	1

1 Event record 172 (X'AC') is a special type of event record that is used to represent an IMS Performance Analyzer command being issued. For example, this event record is recorded when the ROUTE command for DRAIN or RESUME is issued. It includes the ROUTE command as well as details of actions taken on behalf of the ROUTE command such as AUTORESUME processing. If the ROUTE DRAIN or ROUTE RESTORE command targets a routing list, one "request" record and one "response" record is created for the routing list, as well as one "both" record for each datastore in the routing list. The response record for the routing list will contain the highest return code and reason code for all of the datastore records.

User data logging record

The Event Recording User Data Logging record is produced when user data is submitted to the journal for logging.

Table 12. User data logging event record

Code (Hex)	Code (Dec)	Event description	Collection level
AB	171	Event Recording User Data Logging	1

Event types

There are two types of event records processed by IMS Performance Analyzer, Connect Status Events and Message Related Events.

Connect Status Event
A Connect Status Event identifies a change in the status of your IMS Connect environment. For example, a resource (Datastore, TMEMBER) becoming available or unavailable, or a Socket becoming accepted for input by a Port task. Connect Status events are typically not related to the processing of input messages, but can affect their processing. Connect Status Event records are identified by a constant Event Key, **EVNT**.

Message Related Event
A Message Related Event identifies an event in the processing of an input message (transaction). Message Related Event records have a STCK token Event Key. Each incoming message is assigned a unique Event Key and every event associated with the processing of the message has the same Event Key. In this way, all events involved in the processing of an input message can be "connected" to obtain a complete picture of the life cycle of the message.

Collection levels

The number and type of event records collected by IMS Connect Extensions varies depending on the Collection level specified for the IMS Connect system.

0 Minimum level. Collects start up and shut down events along with some error events. This is the default.

1 Accounting level. Collects Return from Exit events, OTMA timeout and session error events. This level provides accounting information in terms of the number of messages by Transaction, User Exit, and so on.

2 Transit time reporting. Collects the minimum number of records to run simple transit time reports.

3 Comprehensive performance analysis. Collects all TCP/IP read and write events which provides for analysis of TCP/IP activity.

4 Maximum level. Collects all event records.

Required event records for IMS PA reports

For IMS Connect Extensions to collect IMS Connect event data for reporting, you need to ensure that IMS Connect Extensions Event Collection is active and that you specify a Collection Level that is appropriate to the type of reports that you want to produce.

The following figure summarizes how the IMS Connect Extensions Collection Level affects the IMS PA reports.

	Collection Level				
Connect Report	0	1	2	3	4
Transaction Transit Reports					
Analysis	no	no	yes *a	yes	yes
Log	no	no	yes *a	yes	yes
Extract	no	no	yes *b	yes	yes
Resource Usage Reports					
Port Usage	no	no	yes *c	yes	yes
Resume Tpipe	no	no	yes	yes	yes
ACK/NAK	no	no	yes	yes	yes
Exception Events	yes *d	yes *d	yes *d	yes *d	yes *d
Gap Analysis	yes *d	yes *d	yes *d	yes *d	yes *d
Trace Reports					
Transit Event Trace	no	no	yes *d	yes *d	yes

Note:

"no" indicates that the report is not produced when run against data collected at this level;
message "No observations in report period" is printed

"yes" indicates that the report is produced when run against data collected at this level, however:

*a Input READ Socket (record 49) and SAF fields (records 3F, 40) are 0

*b Input READ Socket (49), SAF (3F, 40) and Acknowledgement (49, 4A) fields are 0

*c WRITE (4A) Count and Length fields are zero, and
READ Count and Length fields contain only Prepare READ Socket (3C) since READ Socket (49) is 0

*d Only the event records that are collected at that level are listed in the report

Figure 326. IMS Connect reports: IMS Connect Extensions Collection Level cross-reference

OTMA NAK sense codes

This list describes the sense codes that accompany OTMA negative acknowledgement (NAK) messages in type 42 records.

```
01 OTMA sign-on not established
02 Client cannot send/receive messages
03 State-data or XCF length error
04 Bad correlator
05 Multi-segment message duplicated
06 Bad XCF return code
07 Maximum (255) clients reached
08 Client-bid security request failed
09 Invalid OTMA command
0A OTMA data message not allowed
0B Invalid message type
0C Unknown response type
0D Nonexistent Tpipe for continuation
0E Unable to create Tpipe
0F Tpipe is stopped
10 No State data
11 Commit message was not to terminate
12 Prefix (4KB) too large
13 Hash table size not set
14 Second client-bid sent, first still active
15 Hash table storage allocation failed
16 Client not active
17 Invalid SYNC level
18 Invalid Tpipe name
19 Invalid Client name
1A Message cancelled due to IMS error
1B IMS is shut down
1C Invalid Commit Mode
1D User data too long (1K)
1E Server user data too long (256)
1F Sequence number mis-match
20 No Application data
21 No Chain flag
22 Tpipe not found
23 Sequence number invalid
24 Previous conversation still in progress
25 RESYNC Protocol violation
26 RESYNC Dequeue failed
27 RESYNC RSN reset failed
28 Resume tpipe request rejected
29 Total number of tpipes exceeded MAXTP limit
2A Delivery of OTMA message to remote IMS system failed
2B Late or invalid ACK/NAK sent to OTMA
2C Invalid Commit Mode
2D SYNC/Commit levels incompatible
2E SYNC level/Context ID incompatible
2F Unable to express context interest
30 Number of input messages waiting to be processed exceeds maximum number allowed
31 OTMA cannot accept new transactions or commands due to a /STOP TMEMBER command
33 Security violation while processing a resume tpipe request
34 Input transaction expired and therefore cancelled
35 Response message invalid, or failed to process synchronous callout request
36 Invalid message length as sum of parts is greater than XCF message length
37 Client's MULTIRTP value differs from that of super member group of tmember
```

Figure 327. OTMA NAK sense codes

For more information, refer to the section "OTMA Sense Codes for NAK Messages" in the *IMS Open Transaction Manager Access Guide and Reference.*

Typical event flow with Sync Level NONE

The typical event flow of an incoming transaction with Sync Level NONE is shown in the following example.

```
3C Prepare Read Socket              <== Incoming message from client
49 Read Socket
3D Message Exit called for READ
3E Message Exit return for READ
41 Message sent to OTMA             <== Sent to OTMA for processing
42 Message received from OTMA
3D Message Exit called for XMIT
3E Message Exit return for XMIT
4A Write Socket                     <== Response sent back to client
0C Begin Close Socket               <== Non-persistent Socket is closed
0D End Close Socket
48 Trigger event CLOS               <== Connect has finished processing message
```

Figure 328. IMS Connect event records: typical event flow with Sync Level NONE

Typical event flow with Sync Level CONFIRM

The typical event flow of an incoming transaction with Sync Level CONFIRM is shown in the following example.

```
3C Prepare Read Socket              <== Incoming message from client
49 Read Socket
3D Message Exit called for READ
3E Message Exit return for READ
41 Message sent to OTMA             <== Sent to OTMA for processing
42 Message received from OTMA
3D Message Exit called for XMIT
3E Message Exit return for XMIT
4A Write Socket                     <== Response sent back to client
49 Read Socket                      <== ACK received from Client
3D Message Exit called for READ
3E Message Exit return for READ
41 Message sent to OTMA             <== ACK sent to OTMA
42 Message received from OTMA
46 De-allocate Session
3D Message Exit called for XMIT
3E Message Exit return for XMIT
4A Write Socket                     <== Response sent back to client
0C Begin Close Socket               <== Non-persistent Socket is closed
0D End Close Socket
48 Trigger event CLOS               <== Connect has finished processing message
```

Figure 329. IMS Connect event records: typical event flow with Sync Level CONFIRM

Chapter 35. OMEGAMON TRF records

Transaction performance and resource utilization statistics are collected by OMEGAMON subsystems with the Transaction Reporting Facility (TRF) Trace running.

IMS Performance Analyzer processes TRF records extracted from the IMS Log by running the Transaction Reporting Facility post-processor.

The following table lists the TRF Extractor output records that are used in IMS Performance Analyzer reporting.

Table 13. OMEGAMON TRF Extractor records processed by IMS PA

Record code (hex)	Description
10	Transaction Message
11	Output Message
12	IMS System Message
13	Database Detail
15	MSDB Detail
16	DEDB Detail
17	Database Summary
18	DB2 Summary
19	Fast Path Database Summary

Chapter 36. OMEGAMON ATF records

IMS Performance Analyzer uses 1-byte hexadecimal codes to identify the ATF records that it processes.

Table 14. OMEGAMON ATF records processed by IMS PA

Record code (hex)	Description
01	DLI
03	Fast Path
04	Summary completion
05	DLI IOPCB detail
06	Full Function
82	DB2
87	Generic External Subsystem
88	IBM MQ
F1	Transaction end

Chapter 37. Sample library

The IMS PA Sample Library SIPISAMP contains sample JCL to generate IMS PA reports and extracts.

It also contains examples of extended functions such as:

- Allocating inflight data sets for IMS, Connect or ATF reporting
- Loading extract and history data into DB2 tables and running queries on that data
- Fast Path report enhancements
- Invoking the Transaction Substitution Exit
- Defining IMS PA reports to the IMS Tools Knowledge Base
- Running User Programs under IMS PA

Report Set JCL

The sample library SIPISAMP contains members with sample JCL to generate IMS PA reports and extracts. Also included are examples for Automated file selection and BMP analysis.

IPICEXJC
Connect Report Set

IPILDBRC
Automated file selection (DBRC Log Selection for IMS logs and Journal File Selection for IMS Connect Extensions journals)

IPILOGJC
Log Report Set

IPIMONJC
Monitor Report Set

IPISBMP
Log Report Set for BMP analysis

Related tasks:

"Run Log Report Set" on page 291
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.

"Run Monitor Report Set" on page 495
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

"Run Connect Report Set" on page 571
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category, or individual reports.

Related reference:

"Log Report Set JCL" on page 409
The JCL built by IMS PA for the batch execution of a Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPILOGJC for a Log Report Set.

"Transaction Transit (Form-based) Options" on page 318
The IMS PA Form-based Transaction Transit Options define control information

that applies to the Form-based Transaction Transit reports within the Report Set.

"Transaction Transit (Form-based) Options" on page 437
Form-based Transaction Transit Options define general control information for the Form-based Transaction Transit reports.

"Monitor Report Set JCL" on page 535
The JCL built by IMS PA for the batch execution of a Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPIMONJC for a Monitor Report Set.

"IMS Connect Report Set JCL" on page 601
The JCL built by IMS PA for the batch execution of an IMS Connect Report Set via the SUBMIT or JCL (or RUN) commands is based on the sample library member IPICEXJC.

Allocate IMS inflight data sets

The sample library SIPISAMP contains a member with sample JCL to create IMS inflight data sets.

IPIIMSIF

Allocate the IMS inflight transaction data sets using either GDG or fixed data set names. Both options ensure that no changes are required to the Report JCL.

Generation data group (GDG) is the recommended approach because it does not require a post-step to switch (rename) the inflight data sets.

The JCL also initializes the first inflight data set to an empty state, in preparation for the first batch request.

Use the following to define the GDG base. Notice the GDG limit is set to 3, although the report job requires only two data sets. This will ensure that in the event of a reporting failure, corrective action can be taken: delete the generation 0 data set and rerun the job.

```
//IPIIMSIF JOB,NOTIFY=&SYSUID
//DEFGDG   EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 DEFINE GDG (NAME(<&sysuid.IPI.IMS.INFLIGHT>) -
             NOEMPTY                          -
             SCRATCH                          -
             LIMIT(3))
/*
//*
//DEFGEN0  EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DUMMY,RECFM=VB,BLKSIZE=32760,LRECL=32756
//SYSUT2   DD DSN=<&sysuid.IPI.IMS.INFLIGHT(+1)>,
//            DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//            DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)
//*
```

Figure 330. IPIIMSIF: IMS inflight data set using GDG

Use the following for fixed data set names. The IMSINFLT and IMSOTFLT data sets are switched in an IDCAMS post step after reporting has completed successfully (RC=0).

```
//IPIATFIF JOB,NOTIFY=&SYSUID
//GENERIN  EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DUMMY,RECFM=VB,BLKSIZE=32760,LRECL=32756
//SYSUT2   DD DSN=<&sysuid.IPI.IMS.INFLIGHT>,
//            DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//            DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)
//*
//GENEROT  EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DUMMY,RECFM=VB,BLKSIZE=32760,LRECL=32756
//SYSUT2   DD DSN=<&sysuid.IPI.IMS.OTFLIGHT>,
//            DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//            DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)
//
```

Figure 331. IPIIMSIF: IMS inflight data set using specified DSNs

Related reference:

"Log Global Options" on page 294
The IMS PA Log Global Options define general control information which applies to all active reports within the Report Set.

"Log Global Options" on page 425
The Log Global Options define output and general control information for the log reports.

Connect Transit Extracts

The sample library SIPISAMP contains members with sample JCL to load Connect Transit extract data into DB2 tables and run SQL queries.

IPICLDDL
DDL for DB2 Table Create (List Extract)

IPICLLOD
Load data into DB2 Table (List Extract)

IPICSDDL
DDL for DB2 Table Create (Summary Extract)

IPICSLOD
Load data into DB2 Table (Summary Extract)

IPICQML1
QMF query showing average Transit input Elapsed times (including Pre-OTMA and SAF), Processing OTMA and Response time (List Extract)

IPICQML2
QMF query showing average Transit Output Elapsed time, including Confirm, Post-OTMA, XMIT EXIT and Acknowledgement READ Socket (List Extract)

IPICQMS1
SQL Query showing average Transit Processing times (Summary Extract)

IPICQMS2
SQL Query showing average Transit Queue times (Summary Extract)

For examples, see "Understanding the Connect Transit Extract" on page 764.

Allocate Connect inflight data sets

The sample library SIPISAMP contains a member with sample JCL to create the inflight data sets for Connect reporting.

IPICEXIF

Allocate the Connect inflight transaction data sets using either GDG or specified data set names. Both options ensure that no changes are required to the CEX Report JCL.

Use the following to define the generation data group (GDG) base. Notice the GDG limit is set to 3, although the report job requires only two data sets. This will ensure that in the event of a reporting failure, corrective action can be taken - delete the generation 0 data set and rerun the job.

```
//IPICEXIF JOB,NOTIFY=&SYSUID
//DEFGDG   EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 DEFINE GDG (NAME(<&sysuid.ipi.cex.inflight>) -
             NOEMPTY                          -
             SCRATCH                          -
             LIMIT(3))
/*
//*
//DEFGEN0  EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DUMMY,RECFM=VB,BLKSIZE=27998,LRECL=27994
//SYSUT2   DD DSN=<&sysuid.ipi.cex.inflight(+1)>,
//            DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//            DCB=(RECFM=VB,BLKSIZE=27998,LRECL=27994)
//*
```

Figure 332. IPICEXIF: Create Connect inflight data set using GDG

Use the following for fixed data set names. The CEXINFLT and CEXOTFLT data sets are switched in an IDCAMS post step after reporting has completed successfully (RC=0).

```
//IPICEXIF JOB,NOTIFY=&SYSUID
//GENERIN  EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DUMMY,RECFM=VB,BLKSIZE=27998,LRECL=27994
//SYSUT2   DD DSN=<&sysuid.ipi.cex.inflight>,
//            DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//            DCB=(RECFM=VB,BLKSIZE=27998,LRECL=27994)
//*
//GENEROT  EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DUMMY,RECFM=VB,BLKSIZE=27998,LRECL=27994
//SYSUT2   DD DSN=<&sysuid.ipi.cex.otflight>,
//            DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//            DCB=(RECFM=VB,BLKSIZE=27998,LRECL=27994)
//
```

Figure 333. IPICEXIF: Create Connect inflight data set using specified DSNs

Allocate ATF inflight data sets

The sample library SIPISAMP contains a member with sample JCL to create the inflight data sets for ATF reporting.

IPIATFIF

Allocate the Connect inflight transaction data sets using either GDG or fixed data set names. Both options ensure that no changes are required to the ATF Report JCL.

Generation data group (GDG) is the recommended approach because it does not require a post-step to switch (rename) the inflight data sets.

The JCL also initializes the first inflight data set to an empty state, in preparation for the first batch request.

Use the following to define the GDG base. Notice the GDG limit is set to 3, although the report job requires only two data sets. This will ensure that in the event of a reporting failure, corrective action can be taken: delete the generation 0 data set and rerun the job. For sample JCL using inflight GDGs, see "Sample JCL using GDG inflight data sets" on page 676.

```
//IPIATFIF JOB,NOTIFY=&SYSUID
//DEFGDG   EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//SYSIN    DD *
 DEFINE GDG (NAME(<&sysuid.IPI.ATF.INFLIGHT>) -
             NOEMPTY                          -
             SCRATCH                          -
             LIMIT(3))
/*
//*
//DEFGEN0  EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DUMMY,RECFM=VB,BLKSIZE=32760,LRECL=32756
//SYSUT2   DD DSN=<&sysuid.IPI.ATF.INFLIGHT(+1)>,
//            DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//            DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)
//*
```

Figure 334. IPIATFIF: ATF inflight data set using GDG

Use the following for fixed data set names. The ATFINFLT and ATFOTFLT data sets are switched in an IDCAMS post step after reporting has completed successfully (RC=0). For sample JCL using fixed data set names, see "Sample JCL using fixed inflight data set names" on page 676.

```
//IPIATFIF JOB,NOTIFY=&SYSUID
//GENERIN  EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DUMMY,RECFM=VB,BLKSIZE=32760,LRECL=32756
//SYSUT2   DD DSN=<&sysuid.IPI.ATF.INFLIGHT>,
//            DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//            DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)
//*
//GENEROT  EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN    DD DUMMY
//SYSUT1   DD DUMMY,RECFM=VB,BLKSIZE=32760,LRECL=32756
//SYSUT2   DD DSN=<&sysuid.IPI.ATF.OTFLIGHT>,
//            DISP=(,CATLG),UNIT=SYSDA,SPACE=(CYL,(10,10)),
//            DCB=(RECFM=VB,BLKSIZE=32760,LRECL=32756)
//
```

Figure 335. IPIATFIF: ATF inflight data set using specified DSNs

Export to DB2: Bind DB2 Plan

The sample library SIPISAMP contains members with sample JCL to bind a DB2 plan for program IPIUTILB.

IPIUTILB is an alternative to the DB2 load utility DSNUTILB when a Summary extract is loaded into a DB2 table with the Resume option. When a record in the extract file has a duplicate key to a row in the table, IPIUTILB accumulates the data, whereas DSNUTILB would stop processing on this condition.

IPIDBRMU
Binds the DB2 plan for program IPIUTILB

IPIDB2BD
JCL to create the DB2 package required to run the alternative load utility IPIUTILB

```
//IMSPA    JOB,NOTIFY=&SYSUID
//*
//BIND EXEC PGM=IKJEFT01
//*
//STEPLIB DD DISP=SHR,DSN=dsn.dsnload
//SYSTSPRT DD SYSOUT=*
//SYSTSIN DD *
DSN SYSTEM(ssid)
BIND PACKAGE(package) -
MEMBER(IPIDBRMU) -
LIBRARY('IPI.V4R4M0.SIPISAMP') -
VALIDATE(BIND) -
ISOLATION(CS) -
RELEASE(COMMIT)
BIND PLAN(DB2plan) -
PKLIST(package.*) -
ACQUIRE(USE) -
ACTION(REP) -
RETAIN
/*
```

Figure 336. IPIDB2BD: Sample JCL to create the DB2 package required to run the alternative load utility IPIUTILB

Authorization Exit for IMSPLEX security

The sample library SIPISAMP contains a sample program and a JCL member for a Request Authorization Exit.

The Request Authorization Exit is optional. The Exit stops DBRC Log Selection when an IMSPLEX name is specified. If not installed, then all requests are allowed.

IPIUAUTH
Request Authorization Exit

IPIU002
Authorization Exit JCL

Transaction History File samples

The sample library SIPISAMP contains members with sample JCL to create a Transaction History File, load the data into DB2 tables, and run SQL queries.

IPITH$$$
SIPISAMP member documentation

IPITHCOL
Collection

IPITHCOS
Collection using DBRC Log Selection

IPITHDDL
DDL for DB2 Table Create

IPITHDOC
Transaction History File documentation

IPITHGDA
IDCAMS statements to define generation data group (GDG) base

IPITHGDM
Define a new history file (for example, at month-end)

IPITHLOD
Load data into DB2 Table

IPITHQM1
QMF query showing average Transit Queue times

IPITHQM2
QMF query showing average Transit Queue times and average End-User Response times

IPITHQM3
QMF query showing average Transit Queue time and approximate CPU and DL/I resource usage

IPITHQM4
QMF query showing Transit Queue time peak percentile.

For examples, see “Understanding the Transaction History File” on page 759.

Transaction Substitution Exit

The sample library SIPISAMP contains members that demonstrate how to use the Transaction Substitution Exit facility.

IPITSUB#
Transaction Substitution Exit documentation: how it works, how to install it, how to use it

IPITSUBA
Assembly and Link-Edit JCL

IPITSUBR
Run Transit Reports

IPITSUBS
JCL to install the USERMOD

IPITSUBU
USERMOD to install the Transaction Substitution Exit

IPITSUBX
Sample Transaction Substitution Exit that forces IMS PA to report an alternate Transaction Code name

IPIXAASM
JCL to assemble and link the sample user program IPIXAPGP into the IMS PA User Load Library (dialog option 0.1 **IMS PA Settings**)

IPIXAPGP
Sample Transaction Substitution Exit to support Application Groups, relevant to the Transit Analysis, Statistics and Transaction Exception reports, or form-based transit reports specifying a report form that includes the APPLNAME field

This Exit enables you to change the Transaction Code name that is reported by selected Transit reports. The only reports affected by the Exit are the Transit Analysis, Statistics and Transaction Exception reports.

To code, install, and then request the Transaction Substitution Exit, the procedure is:

1. Tailor the exit source code IPITSUBX to meet your requirements. IPITSUBX contains the sample Assembler language Exit that forces IMS PA to report an alternate name in the Transaction Code name field. This sample exit extracts the 7 byte replacement TranCode name from offset 40 in the message text.

   You can assign any name to the Exit, and create as many Exits as required, although only one Exit can run at a time.
2. Install the Exit using either of two methods:
   a. SMPE USERMOD.

      IPITSUBU contains USERMOD IPIU001. It installs the Exit into your IMS PA SMPE environment.

      IPITSUBS contains the JCL to install the USERMOD. Tailor the JCL to suit your requirements.
   b. Direct Assemble and Link without SMPE.

      IPITSUBA contains JCL to Assemble and Link the Exit without SMPE.
3. To request the Exit from the dialog, specify the name of the Transaction Substitution Exit in Log Global Options in the Log Report Set. See Figure 160 on page 295.
4. To request the Exit using batch commands, specify the name of the Exit in the TRANEXIT operand as shown in IPITSUBR or the following example:

```
//IMSPA JOB ,NOTIFY=&SYSUID
//IPI      EXEC PGM=IPIMAIN,PARM='V151'
//STEPLIB  DD  DSN=IMSPA.V440.SIPILINK,DISP=SHR
//LOGIN    DD  DISP=SHR,DSN=ims.log.file
//SYSPRINT DD  SYSOUT=*
//IPICMD   DD  *
 IMSPALOG TRANEXIT(IPITSUBX)
 IMSPALOG ANAL(TRANCODE),TRANEXC(TRANCODE)
 IMSPALOG EXECUTE
/*
```

IMS Tools Knowledge Base setup

The sample library SIPISAMP contains a member with sample JCL to define or update the register of reports in the IMS Tools Knowledge Base.

IPIDITKB
If the Product Definition Table (PDT) is updated, run this job to load it into the IMS Tools Knowledge Base repository.

For more information, see Chapter 40, "IMS Tools Knowledge Base," on page 771.

```
//IPIDITKB JOB,NOTIFY=&SYSUID
//*********************************************************************
//* Customize the job by setting the following symbols :              *
//*                                                                   *
//* <srvrname>             IMS Tools Knowledge Base server group name *
//* <HKT.V1R5M0.SHKTLOAD>  IMS Tools Knowledge Base Load Library      *
//* <IPI.V4R4M0.SIPILINK>  IMS PA link library                        *
//*                                                                   *
//*********************************************************************
//*
//IPIITKB  EXEC PGM=HKTAPRA0,PARM='ITKBSRVR=<srvrname>'
//STEPLIB  DD  DISP=SHR,DSN=<HKT.V1R5M0.SHKTLOAD>
//         DD  DISP=SHR,DSN=<IPI.V4R4M0.SIPILINK>
//*  Sysout data sets
//SYSPRINT DD  SYSOUT=*
//OUTRPT   DD  SYSOUT=*
//*
//*  Command Input
//SYSIN    DD  *
  ADDPROD TABLE=IPIITKB REPLACE=YES
  LIST    PRODUCTID=*,REPORTID=*
/*
```

Figure 337. IPIDITKB: Define IMS PA reports to IMS Tools Knowledge Base

User programs

The sample library SIPISAMP contains members with sample user programs that can run under IMS PA and associated JCL.

IPIERA30
User Program to invoke the IMS Record 67 formatting routine DFSERA30. This sample is supported by the following additional members:

IPIERA3A
Assemble and Link IPIERA30

IPIERA3R
Run User Program IPIERA30

IPIPSUP1

User Program 1: Sample User Program that processes type 07 and 70 log records. This sample is supported by the following additional members:

IPIPUASM

Assemble and Link IPIPSUP1

IPIPURUN

Run IPIPSUP1

IPIUPGM9

User Program 9: Sample IMSPARS User Program for IMS Version 13. This sample is supported by the following additional members:

IPIUASM9

Assemble and Link IPIUPGM9

IPIUPARS

Run IPIUPGM9

Related reference:

"User-written reports" on page 389
IMS PA supports up to 21 user-written reports in each Report Set. These can be activated for execution together with other reports in the Report Set in a similar manner to the supplied log reports.

"USERPGM: User-Written Record Processors" on page 485
The USERPGM operand of the IMSPALOG batch command requests that a user-written program is to be run.

Chapter 38, "User-written log record processors," on page 751
You can write your own User Programs to process IMS Log records. User Programs can be specified in Report Sets and run in conjunction with other IMS PA reports, so IMS PA and user reports can be produced with a single pass of the Log data. Macros are provided that allow User Programs to interface with IMS PA, and reduce the coding complexity.

Chapter 38. User-written log record processors

You can write your own User Programs to process IMS Log records. User Programs can be specified in Report Sets and run in conjunction with other IMS PA reports, so IMS PA and user reports can be produced with a single pass of the Log data. Macros are provided that allow User Programs to interface with IMS PA, and reduce the coding complexity.

The source code structure for a user-written program is as follows:

```
progname IPIINIT 'January 12, 2018',
                 IDS=(07,...),          .Log record codes required
                 INIT=initrtn           .Initialization routine
 . . .
initrtn  DS      0H                     .Initialization routine
 . . .
REC07    IPIREC  07                     .Log Record 07 routine
 . . .
RECEOD   IPIREC  EOD                    .End of data routine
 . . .
         END
```

IPIINIT must be the first line of code, and performs the following function:
- Defines the User Program to IMS PA
- Provides the interface to IMS PA control tables and services
- Defines the Log record codes to be passed to the program
- Establishes program linkage, base registers and save areas
- Identifies the program initialization routine to be called before processing commences

IPIREC macros identify the entry points for processing Log records. EOD is a special record type that identifies the program entry point when end of data is reached. If report data is accumulated when processing record codes, EOD processing can print the reports and free the data storage.

A sample User Program called IPIPSUP1 is provided in the SIPISAMP library. IPIPSUP1 demonstrates most of the facilities available to User Programs, and is a good starting point for the development of your own User Program.

To install a user-written program:
- Include the SIPIMAC library in the SYSLIB concatenation of your assembly JCL.
- Assemble your program.
- Link-edit into the user program load library.
- Specify the user program load library to the dialog. From the **Options** menu in the action bar, select option 1 **IMS PA Settings**. See "IMS PA Settings" on page 67 for specification of the **User Program Load Library**.

Include the user-written program in a Log Report Set, as described in "User-written reports" on page 389.

The IMS PA macros in the rest of this chapter are especially applicable to user-written programs.

Related reference:

"User programs" on page 749
The sample library SIPISAMP contains members with sample user programs that can run under IMS PA and associated JCL.

IPIAMODE macro

The IPIAMODE macro changes the addressing mode (AMODE) of your program to 24- or 31-bit addressing.

User Programs are invoked by IMS PA in 24-bit mode. All IMS PA control blocks and Log records passed to your program reside below the 16-megabyte line. 31-bit addressing mode offers virtual storage constraint relief when using large report queues. User Programs must revert back to 24-bit mode before they pass control back to IMS PA.

```
label  IPIAMODE amode
```

amode
The new addressing mode (AMODE) to set, can be 24 or 31.

Example

`IPIAMODE 31` starts the User Program executing in 31-bit addressing mode.

`IPIAMODE 24` reverts back to 24-bit addressing mode.

IPICHECK macro

The IPICHECK macro checks the include/exclude table for values to be included or excluded.

```
label  IPICHECK   type,table{,value}{,OK=}{,NOTAB=}{,NOTOK=}
                       {,SYNTAB=}{,RETURN=}{,ID=}
```

type
Format of the operand value to be tested; *type* can be one of the following:

- **C** Eight-character string
- **X** Four bytes hexadecimal
- **F** One fullword
- **H** One or two halfwords for each operand specified

table
Name of the operand to be tested.

value
Value of the operand to be tested. If the value is omitted, it must previously have been moved into the 8-byte area labelled `CONVERT`.

OK=
Label of the procedure to receive control if the value is matched in the table. Register notation is permitted.

NOTAB=
Indicates the include/exclude table does not contain entries for the named operand.

NOTOK=
Label of the procedure to receive control if the value is not matched in the table. Register notation is permitted.

SYNTAB=
Optional. Specifies your synonym table.

RETURN=
Defines an optional return address. The default is the next statement after IPICHECK.

ID=
The address of the address of an optional program entry table. The default is `$IPPGMAD`.

Instead of using the keyword operands for exits, you can branch on the return code in register 15. Register 15 will contain 0, 4, or 8 for `OK`, `NOTAB`, or `NOTOK`, respectively.

Example

Assume an IMS PA Report Set specifies a Transaction Code Object List with the transaction code TA01 to be included in the report.

Suppose the following macro is executed, where TRANSACT contains the value of the transaction code taken from the log:

```
         MVC      TRANSACT,=CL8'TA01'
         .
         .
         .
         IPICHECK C,TRANCODE,TRANSACT,NOTOK=EXIT
         .
         .
         .
TRANSACT DC       CL8'xxxx'
```

If the value in TRANSACT is TA01, control goes to the next instruction in the sequence; otherwise control goes to `EXIT`.

The following example accomplishes the same thing in a slightly different way:

```
         MVC      CONVERT,TRANSACT
         IPICHECK C,TRANCODE,NOTOK=EXIT
         .
         .
         .
CONVERT  DS       CL8
```

IPIINIT macro

The IPIINIT macro initializes a user-written program and provides an interface to IMS PA.

```
label   IPIINIT    date,{,IDS=}{,INIT=}{,PRINT=}
```

date
A character string giving the date for the current version of the program.

IDS=
List of log record numbers to be processed. The numbers are separated by commas and enclosed in parentheses.

INIT=
Label of a procedure for further initialization.

PRINT=GEN|NOGEN
Print or suppress print lines on the assembler listing.

NOGEN is the default.

The following code:
- Initializes a source program module with a date identification of 'JAN. 12, 2018'
- Processes log records 01, 03, 07, and 08

```
IPIUPGM1 IPIINIT 'JAN. 12, 2018'                          *
              IDS=(01,03,07,08)
```

IPIREC macro

The IPIREC macro defines entries pointed to by sublist tables.

IPIREC gives a DSECT of the specified log record and establishes a USING statement. IPIREC also provides an EP=(log record number) on dumps to indicate which record was being processed at the time of failure.

```
label      IPIREC       logcode|EOD,USING=,TIMECHK=
```

logcode|EOD
Log record number or EOD for end-of-data signal.

USING=NO|register number
To generate BALR and USING.

NO is the default.

TIMECHK=YES|NO
If YES is specified, the log record is time-checked and skipped if it does not lie within time limits. This parameter does not apply to FE (EOF) records.

YES is the default.

IPIRPTQ macro

The IPIRPTQ macro provides a report queue facility for User Programs.

Report queues are keyed data records in virtual storage managed by IMS PA. They enable User Programs to quickly and easily process information required to build reports. The report queue record format is defined in the User Program, and

consists of a key section, followed by a data section. IMS PA handles all indexing and storage management associated with report queues. User programs must meet the following conditions when using report queues:

- The IPIRPTQ macro is issued in AMODE 31, as all report queue storage resides above the 16-megabyte line.
- Report queue records are processed in AMODE 31, as they reside above the 16-megabyte line.
- Report queue record keys are not changed by the User Program. The data portion of records can be updated by User Programs.

```
label  IPIRPTQ REQ=,ID=
               {,KEYLEN=,RECLEN=}
               {,KEY=}{,REC=}
               {,FOUND=}{,NOTFND=}
               {,EMPTY=}{,END=}
```

REQ=

Request type can be one of the following:

DEFINE
Define a report queue. The report queue definition is 128 bytes long and contains the information required to manage the report queue.

INIT Re-initialize the report queue. All records in the report queue are deleted, and all storage obtained for the report queue is freed.

FIND Find a record in the report queue.

ADD Add a new record to the report queue.

SCAN Sequentially scan the report queue. SCAN requests must specify a label on the IPIRPTQ macro invocation. After processing a record, the user program requests the next record by branching to the label suffixed by 1 For example:

```
LOOP  IPIRPTQ ID=MYQ,REQ=SCAN,  .Scan Report Queue
         EMPTY=EMPTY,END=LOOPX
  .  .  .                       .Process record
      B  LOOP1                  .Get next record
```

ID=

Report queue identifier. Three (3) character ID that uniquely identifies the report queue. All requests to the same report queue must specify the same ID.

KEYLEN=

For REQ=DEFINE, specifies the key length of the report queue. For REQ=FIND, KEYLEN can optionally be specified to request a search for an abbreviated key. For example, if TRANA and TRANB were two keys in the report queue, KEY=TRAN,KEYLEN=4 will return the TRANA record.

RECLEN=

For REQ=DEFINE, specifies the record length of the report queue. Record length is the sum of the key and data lengths.

KEY=

For REQ=FIND, specifies the address of the search key.

REC=
For REQ=ADD, specifies the address of the record to be added to the report queue.

FOUND=
For REQ=FIND, program label to branch to the specified key is found.

NOTFND=
For REQ=FIND, program label to branch to the specified key is not found.

EMPTY=
For REQ=SCAN, program label to branch to if the report queue is empty.

END=
For REQ=SCAN, program label to branch to if the end of the report queue has been reached.

Return codes

For REQ=FIND, a return code is set in R15:
0 key found
4 key not found

Output

Upon successful completion of a FIND, ADD or SCAN request, R1 points to the start of the record.

Example

Refer to sample User Program IPIPSUP1 in the SIPISAMP library for an example of how to use report queues.

IPITEST macro

The IPITEST macro tests any byte in the program directory with a test under mask.

```
label      IPITEST      FLAG=,AT=,NZ=,Z=
```

FLAG=
Binary (or hexadecimal) test value or symbolic.

AT=
Label of the byte to be tested.

NZ=
Label to go to on a non-zero condition.

Z= Label to go to on a zero condition.

Example

To test the bytes in $IPMODF1 in the IPITINTF program directory for X'40' and then branch to EXIT if the bytes are not equal, code the following:

```
IPITEST FLAG=X'40',AT=$IPMODF1,NZ=EXIT
```

IPITIME macro

The IPITIME macro calls the time check routine.

```
label      IPITIME       RETADDR=
```

RETADDR=EXIT|label|null
Branches to the specified RETADDR if the time is outside the time limits. Branches to EXIT if RETADDR is omitted. If RETADDR is null (RETADDR=,), supply a branch instruction. Branches to the next instruction in the sequence (R14+4) if the time is within the specified limits.

EXIT is the default.

Example

Code one of the following to branch to BADTIME if the log time is outside the bounds specified by the **From** and **To** date and time on the User Processor panel.

```
IPITIME  RETADDR=BADTIME

             or

         IPITIME  RETADDR=
         B        BADTIME
TIMEOK   EQU      *
```

Date/time conversion routines

IMS PA provides date/time conversion subroutines that your user program can call.

```
   BAS       R14,MIC2TIME

or
   BAS       R14,TIME2MIC

or
   BAS       R14,CNVTDT2G
```

MIC2TIME

Converts microseconds to date and time.

Accepts as input in FR0 (floating point register zero), microseconds since 00:00 1 January 1973, and returns the following output:

- In R0 (register zero), the date in the format *ccyyddd$* where:
  cc is the century, 00 for the 20th century, 01 for the 21st century, and so on.
  yyddd is the ordinal date, for example, 18239

$ is the sign bit

- In R1 (register one), the time in the decimal format *hhmmssth,* representing hours, minutes, seconds, tenths and hundredths of seconds.

TIME2MIC

Converts date and time to microseconds.

Accepts either of the following as input:

- In R0 (register zero), the date in the format *ccyyddd$* where:
  cc is the century, `00` for the 20th century, `01` for the 21st century, and so on.
  yyddd is the ordinal date, for example, 18239
  $ is the sign bit

  In R1 (register one), the time in the format *hhmmssth,* representing hours, minutes, seconds, tenths and hundredths of seconds.

  or

- In R0 (register zero), 0 (zero)

  In R1 (register one), the address of a field which contains a UTC time stamp in the format *yyyyddd$hhmmssmiju* converted to local time. See IMS macro DFSTIMES which describes the time stamp format.

Returns as output in FR0 (floating point register zero), microseconds since 00:00 1 January 1973.

CNVTDT2G

Converts date from ordinal to calendar format.

Accepts as input in R1 (register one), the date in the format *ccyyddd$* where:
cc is the century, `00` for the 20th century, `01` for the 21st century, and so on.
yyddd is the ordinal date, for example, 18148
$ is the sign bit

Returns the following output:

- In R1 (register one), the date in the format *mmddyy$* where:
  mmddyy
  is the calendar date, for example, 052718
  $ is the sign bit
- In the EXTRA2 field, the address of a field which contains a 9 byte character date in the format *ddmmmyyyy,* for example, 27May2018

Chapter 39. Analyzing extracts using DB2

In addition to the versatile form-based extracts, IMS PA can create other extracts suitable for loading into DB2 for analysis using your favorite DB2 query tool.

These extracts include the Transaction History File, and the Connect Transit Extract.

The format of the Transaction History File and Connect Transit Extract data records are described here, with examples that show you how to use QMF SQL queries to analyze the data. Sample jobs are also provided in the SIPISAMP library to illustrate these examples.

For information on exporting and analyzing form-based extracts, see Chapter 18, “Processing form-based extracts (CSV files),” on page 259.

Understanding the Transaction History File

With IMS PA, you can extract and summarize IMS log data in a format suitable for loading directly into DB2 tables. From here you can then run queries or produce reports.

You can create Transaction History Files by running the Transaction History File in a Log Report Set in the dialog.

The command to request the Transaction History File is:

```
IMSPALOG TRANHIST(INTERVAL(hh:mm:ss),...)
```

In the Transaction History File, information is summarized for each transaction code over a short time interval, typically 15 minute intervals. This historical performance data includes transaction transit, response and CPU times, as well as DLI call statistics.

Transaction History record format

The following figure shows the format of the Transaction History File records. The record layout is defined by the assembler macro IPITRHR in the SIPIMAC library.

```
TRHRSTRT DS    0D     .Start of Transaction History record
*
TRHRDATE DS    CL10   .Date='yyyy-mm-dd'  POSITION=01 DATE EXTERNAL(10)
         DS    CL1'-' .Hyphen
TRHRTIME DS    CL8    .Time='hh.mm.ss'             =12 TIME EXTERNAL(8)
TRHRPRID DS    CL4    .Processing IMS Subsystem ID =20          CHAR(4)
TRHRTRAN DS    CL8    .Transaction Code            =24          CHAR(8)
*                     .End of Key
*
*                     .Queue time Totals in microseconds:
TRHRTRA# DS    XL8    .Transaction count -            POSITION=32 FLOAT
TRHRRSP# DS    XL8    .Response count-                POSITION=40 FLOAT
TRHRTINQ DS    XL8    .Input queue elapsed time       POSITION=48
TRHRTPRO DS    XL8    .Processing elapsed time                =56
TRHRTOUT DS    XL8    .Output queue elapsed time              =64
TRHRTTOT DS    XL8    .Total elapsed time -                   =72
*                     .Total=Input+Processing+Output
TRHRTRSP DS    XL8    .End-User Response time -               =80
*
*                     .Queue time Sums-of-Squares:
TRHR2INQ DS    XL8    .Input queue elapsed time       POSITION=88
TRHR2PRO DS    XL8    .Processing elapsed time                =96
TRHR2OUT DS    XL8    .Output queue elapsed time             =104
TRHR2TOT DS    XL8    .Total elapsed time                    =112
TRHR2RSP DS    XL8    .End-User Response time                =120
*
*                     .Start of 07 Application End statistics:
TRHRDLI# DS    XL8    .Transaction count with DLI stats -    =128
TRHRCPUT DS    XL8    .CPU time in microseconds      POSITION=136
*                     .DLI call statistics totals
TRHRDBCL DS    XL8    .DB Calls                      POSITION=144
TRHRDCCL DS    XL8    .DC Calls                              =152
TRHRDBWT DS    XL8    .DB Waits                              =160
```

Figure 338. Transaction History File record layout

All numerical fields are in Floating Point format.

Sample DB2 jobs

Sample DB2 jobs are supplied in the SIPISAMP library to help you create DB2 tables and load the historical data into them:

- Sample DDL job IPITHDDL
- Sample Load job IPITHLOD

You will need the following DB2 settings when completing your JCL:

- DB2 Subsystem ID. For example, DB2P
- DSNTIAD Plan Name. For example, DSNTIAB1
- DB2 Load Library. For example, 'DB2.VB10.SDSNLOAD'
- DB2 Exit Library. For example, 'DB2.VB10.SDSNEXIT'
- DB2 RUNLIB Library. For example, 'DSNB10.RUNLIB.LOAD'

You will also need to define your:

- Storage group
- VOLSER
- VCAT
- Database name
- Table name

The following sample SQL queries are also supplied in the SIPISAMP library to help you run SQL queries using QMF:

- IPITHQM1
- IPITHQM2
- IPITHQM3
- IPITHQM4

Simple query

Transaction History records are already summarized by Time and Transaction Code, so a basic query does not require any scalar functions. The following SQL query lists selected fields in the history record.

```
SELECT TRHRDATE AS "Date",
       TRHRTIME AS "Time",
       TRHRPRID AS "IMS",
       TRHRTRAN AS "TranCode",
       DECIMAL(TRHRTRA#,8) AS "Tran Count",
       DECIMAL(TRHRTINQ/1000,8,1) AS "Input Q_Time",
       DECIMAL(TRHRTPRO/1000,8,1) AS "Process_Time",
       DECIMAL(TRHRTOUT/1000,8,1) AS "Output Q_Time",
       DECIMAL(TRHRTTOT/1000,8,1) AS "Total_Time"
FROM IPIHIST.TRANHIST
```

This query produces output like the following:

```
                                                        INPUT Q      PROCESS     OUTPUT Q        TOTAL
DATE        TIME      IMS   TRANCODE   TRAN COUNT       TIME         TIME        TIME          TIME
----------  --------  ----  --------  -----------  -----------  -----------  -----------  -----------
2018-04-04  05.45.00  DI23  ACIS               31     288340.9       7968.3          0.0     296309.3
2018-04-04  05.45.00  DI23  ZTMEN               6      78096.1       1838.4          0.0      79934.6
2018-04-04  06.00.00  DI23  DN81711A            1          0.9        332.6          0.0        333.6
2018-04-04  06.00.00  DI23  XY5P00A1           31       1343.4       7985.7        587.0       9916.1
2018-04-04  06.00.00  DI23  ZTMEN               6          1.0        407.5          0.0        408.6
2018-04-04  06.00.00  DI23  ZTOFF               6          1.2        591.2          0.0        592.5
2018-04-04  06.15.00  DI23  XY5P00A1           31        694.6       7411.7        439.8       8546.2
2018-04-04  06.15.00  DI23  ZTMEN               6          0.9        418.8          0.0        419.7
2018-04-04  06.15.00  DI23  ZTOFF               6          1.5        327.0          0.0        328.6
2018-04-04  06.30.00  DI23  DN81711A            1          0.2        116.6          0.0        116.9
2018-04-04  06.30.00  DI23  XY5P00A1           31         48.6       8758.4        352.9       9160.0
2018-04-04  06.30.00  DI23  ZTMEN               6          0.9        339.5          0.0        340.4
2018-04-04  06.30.00  DI23  ZTOFF               6          0.9        260.8          0.0        261.7
2018-04-04  06.45.00  DI23  XY5P00A1           31        563.0       6678.8        302.1       7544.0
2018-04-04  06.45.00  DI23  ZTMEN               6          0.9        281.0          0.0        281.9
2018-04-04  06.45.00  DI23  ZTOFF               6          1.6        283.5          0.0        285.2
```

Figure 339. Transaction History File: Simple SQL query by time and transaction code

Calculating averages

The following query summarizes all Response Counts greater than 0 and calculates the average time for each Transit Queue Elapsed time field.

```
SELECT TRHRDATE AS "Date",
       TRHRTIME AS "Time",
       TRHRPRID AS "IMS",
       TRHRTRAN AS "TranCode",
       DECIMAL(TRHRTRA#,8) AS "Tran_Count",
       DECIMAL(TRHRRSP#,8) AS "Resp_Count",
       DECIMAL(TRHRTINQ/1000/TRHRTRA#,8,1) AS "Avg_Input Q_Time ",
       DECIMAL(TRHRTPRO/1000/TRHRTRA#,8,1) AS "Avg_Process_Time",
       DECIMAL(TRHRTTOT/1000/TRHRTRA#,8,1) AS "Avg_Total_Time",
       DECIMAL(TRHRTRSP/1000/TRHRRSP#,8,1) AS "Avg_Response"
FROM IPIHIST.TRANHIST
WHERE TRHRRSP# > 0;
```

This query produces output like the following:

```
                                                                 AVG          AVG          AVG
                                          TRAN         RESP       INPUT Q      PROCESS      TOTAL        AVG
 DATE         TIME      IMS   TRANCODE      COUNT        COUNT      TIME         TIME         TIME       RESPONSE
+----------++--------++----++--------++-----------++-----------++-----------++-----------++-----------++-----------+
 2018-04-04  09.45.00  DI23  ZTOFF              3            3          0.1         48.1         48.2         97.9
 2018-04-04  10.00.00  DI23  ACIS              10           10          0.2        225.5        225.8        225.8
 2018-04-04  10.00.00  DI23  XY5P00A1          21           21          0.6        249.5        273.6        273.6
 2018-04-04  10.00.00  DI23  ZTMEN              6            2          0.1         45.4         45.6         44.3
 2018-04-04  10.00.00  DI23  ZTOFF              4            4          0.3         59.8         60.1        106.2
 2018-04-04  10.15.00  DI23  XY5P00A1          25           25          0.3        231.9        257.4        257.4
 2018-04-04  10.15.00  DI23  ZTOFF              4            4          0.1         46.1         46.3         95.8
 2018-04-04  10.30.00  DI23  XY5P00A1          27           27          0.3        229.0        243.7        243.7
 2018-04-04  10.30.00  DI23  ZTOFF              6            6          0.2         54.3         54.5        105.5
 2018-04-04  10.45.00  DI23  XY5P00A1          28           28          2.0        242.6        267.3        267.3
 2018-04-04  10.45.00  DI23  ZTOFF              5            5          9.9         49.5         59.4        105.8
 2018-04-04  11.00.00  DI23  XY5P00A1          23           23          0.3        229.0        253.1        253.1
 2018-04-04  11.00.00  DI23  ZTOFF              5            5          0.1         47.7         47.9         91.1
 2018-04-04  11.15.00  DI23  XY5P00A1          30           30          0.3        253.2        272.9        272.9
 2018-04-04  11.15.00  DI23  ZTOFF              6            6          0.2         23.7         24.0         65.9
```

Figure 340. Transaction History File: SQL query reporting averages

Calculating peak percentiles

Peak Percentile is a statistical estimate (based on the Normal Distribution) that provides an upper limit value of when *nn*% of tasks completed processing. Peak Percentiles allow you to measure whether workload targets are being met.

The following query calculates the 90% peak percentile of elapsed time fields. The CASE statements show the function required to calculate peak percentiles.

```
SELECT TRHRTRAN AS "TRANCODE",
       INT(SUM(TRHRTRA#)) AS "TRAN COUNT",
       DECIMAL(SUM(TRHRTINQ)/1000/SUM(TRHRTRA#),8,1) AS "AVG_Input Q_Time",
       CASE WHEN (SUM(TRHRTRA#) > 1) THEN
         DEC((&PEAK*SQRT(((SUM(TRHRTRA#)*SUM(TRHR2INQ)/1000000)
                          -POWER(SUM(TRHRTINQ)/1000,2))
                          /(SUM(TRHRTRA#)*(SUM(TRHRTRA#)-1))))
                          +(SUM(TRHRTINQ)/SUM(TRHRTRA#))/1000,13,3)
         ELSE DEC((SUM(TRHRTINQ)/SUM(TRHRTRA#))/1000,10,3)
       END                                          AS Input_PEAK90,
       DECIMAL(SUM(TRHRTPRO)/1000/SUM(TRHRTRA#),8,1) AS "AVG_Process_Time",
       CASE WHEN (SUM(TRHRTRA#) > 1) THEN
         DEC((&PEAK*SQRT(((SUM(TRHRTRA#)*SUM(TRHR2PRO)/1000000)
                          -POWER(SUM(TRHRTINQ)/1000,2))
                          /(SUM(TRHRTRA#)*(SUM(TRHRTRA#)-1))))
                          +(SUM(TRHRTPRO)/SUM(TRHRTRA#))/1000,13,3)
         ELSE DEC((SUM(TRHRTPRO)/SUM(TRHRTRA#))/1000,10,3)
       END                                          AS Process_PEAK90,
       DECIMAL(SUM(TRHRTTOT)/1000/SUM(TRHRTRA#),8,1) AS "AVG_Total_Time",
       CASE WHEN (SUM(TRHRTRA#) > 1) THEN
         DEC((&PEAK*SQRT(((SUM(TRHRTRA#)*SUM(TRHR2TOT)/1000000)
                          -POWER(SUM(TRHRTTOT)/1000,2))
                          /(SUM(TRHRTRA#)*(SUM(TRHRTRA#)-1))))
                          +(SUM(TRHRTPRO)/SUM(TRHRTRA#))/1000,13,3)
         ELSE DEC((SUM(TRHRTTOT)/SUM(TRHRTRA#))/1000,10,3)
       END                                          AS Total_PEAK90
FROM IPIHIST.TRANHIST
GROUP BY TRHRTRAN
ORDER BY TRHRTRAN
```

Note: Replace `&PEAK` with the percentile of your choice. For example, to calculate the 90% peak percentile, replace `&PEAK` with `0.9`.

This query produces output like the following:

TRANCODE	TRAN COUNT	AVG INPUT Q TIME	INPUT PEAK90	AVG PROCESS TIME	PROCESS PEAK90	AVG TOTAL TIME	TOTAL PEAK90
ACIS	789	375.0	-	263.2	-	657.5	-
DN81711A	36	0.3	-	167.4	211.961	167.7	-
XYKCT00	18	5.0	-	21.0	-	26.1	-
XYKUAM00	6	0.2	-	7.7	-	8.0	-
XYKUAN00	10	24.9	-	70.4	-	95.3	-
XYKUAO00	22	12.8	-	100.2	-	113.0	-
XYKUAQ00	20	10.2	-	25.7	-	36.0	-
XYKUA000	8	0.2	-	22.4	-	22.7	-
XYKUA500	4	29.0	-	97.1	-	126.2	-
XYKUA600	2	1.6	-	40.5	-	42.1	-
XYKUA700	2	9.2	-	74.4	-	83.6	-
XYKUA800	23	4.5	-	47.6	-	52.2	-
XYKU9F00	14	0.6	-	12.9	-	13.6	-
XYKU9G00	32	3.2	-	41.0	-	104.4	-
XYKU9H00	23	0.2	-	16.0	-	16.3	-
XYKU9I00	72	0.3	-	32.6	-	32.9	-
XYTACP01	1	122.7	122.720	3988.8	3988.897	4111.6	4111.617
XY5P00A1	1476	9.0	-	245.6	-	272.8	-
ZTMEN	350	223.7	-	57.7	-	700.8	-
ZTOFF	337	887.5	-	46.0	-	933.5	-

Figure 341. Transaction History File: SQL query reporting peak percentiles

Understanding the Connect Transit Extract

You can use to IMS PA to extract IMS Connect event data in a format suitable for loading directly into DB2 tables.

You can create List or Summary extract data sets by running the Connect Transit Extract in a CEX Report Set in the dialog.

The command to request the Connect Transit Extract is:

```
IMSPACEX TRANEXTR([LIST,][SUMMARY,]INTERVAL(hh:mm:ss),...)
```

Connect Summary extract

In the Connect Summary Extract, transaction transit activity is summarized by time interval, typically 15 minute intervals.

Summary record format

The Summary Extract record has the following format.

```
CTSSUMM    CEX Transaction Summary Record

CTSDATE    CL10   Tran Date 'yyyy-mm-dd'
CTSDATES   CL1    Separator '-'
CTSTIME    CL8    Tran Time 'hh.mm.ss'
CTSTC      CL8    Tran Code

CTSINTVL   XL8    Time Interval (seconds)

           Transit Elapsed times (microseconds)
CTSELIN    XL8    Pre-OTMA                    Total
CTSELIN2   XL8    Pre-OTMA                    Sum-of-Squares
CTSELRD    XL8    Input READ Socket           Total
CTSELRD2   XL8    Input READ Socket           Sum-of-Squares
CTSELRX    XL8    Message Exit READ           Total
CTSELRX2   XL8    Message Exit READ           Sum-of-Squares
CTSELSF    XL8    SAF                         Total
CTSELSF2   XL8    SAF                         Sum-of-Squares
CTSELPR    XL8    Processing by OTMA          Total
CTSELPR2   XL8    Processing by OTMA          Sum-of-Squares
CTSELXX    XL8    Message Exit XMIT           Total
CTSELXX2   XL8    Message Exit XMIT           Sum-of-Squares
CTSELAR    XL8    Acknowledgement READ Socket Total
CTSELAR2   XL8    Acknowledgement READ Socket Sum-of-Squares
CTSELCF    XL8    Transaction Confirm         Total
CTSELCF2   XL8    Transaction Confirm         Sum-of-Squares
CTSELOT    XL8    Post-OTMA                   Total
CTSELOT2   XL8    Post-OTMA                   Sum-of-Squares
CTSELRS    XL8    Response time               Total
CTSELRS2   XL8    Response time               Sum-of-Squares

CTSTRAN#   XL4    Transaction count
CTSREJE#   XL4    Rejected count
CTSTIMO#   XL4    Timeout count
CTSFAIL#   XL4    Failed count

CTSCACK#   XL4    Client ACK count
CTSCNAK#   XL4    Client NAK count
CTSONAK#   XL4    OTMA NAK count
CTSRTPI#   XL4    Resume Tpipe message count

CTSPDAVG   XL4    Average Port depth
CTSPDMAX   XL4    Maximum Port depth
CTSPDMIN   XL4    Minimum Port depth
```

Figure 342. Format of Connect Transit Summary Extract record

Sample DB2 jobs

The following sample DB2 jobs are supplied in the SIPISAMP library:

- Sample DDL job IPICSDDL
- Sample Load job IPICSLOD
- Sample SQL queries IPICQMS1 and IPICQMS2

Simple query

Summary tables are already summarized (by time), so a basic query does not require any scalar functions. The following query lists selected fields in the summary table.

```
SELECT CTSTC                      AS TRANSACTION_CODE,
       INTEGER(CTSTRAN#)          AS TRANSACTION_COUNT,
       DECIMAL(CTSELRS/1000,13,4) AS RESPONSE_TOTAL,
       DECIMAL(CTSELIN/1000,10,3) AS PRE_OTMA_TOTAL,
       DECIMAL(CTSELRD/1000,10,3) AS READ_SOCK_TOTAL,
       DECIMAL(CTSELRX/1000,10,3) AS READ_EXIT_TOTAL,
       DECIMAL(CTSELSF/1000,10,3) AS SAF_TOTAL
FROM IPICONS.CTSUMM
```

This query produces output like the following.

```
                                                    PRE           READ           READ
TRANSACTION  TRANSACTION          RESPONSE         OTMA           SOCK           EXIT            SAF
   CODE        COUNT               TOTAL           TOTAL          TOTAL          TOTAL          TOTAL
-----------  -----------  ----------------  -------------  -------------  -------------  -------------
PART                 5         1435.7870       1218.788       1216.187          0.394          0.000
DSPALLI            100        69463.4320      38389.667      37716.086         16.911          0.000
DSPINV             100        67962.7320      34089.078      33201.285         14.207          0.000
PART               205       125199.3300      76138.329      75212.801         24.388          0.000
PART                 3         1831.4520        665.493        663.842          0.346          0.000
DSPALLI             11         3271.7730       2854.238       2848.395          1.465          0.000
DSPINV              11         3249.6670       2834.724       2829.164          1.254          0.000
PART                22         6409.3750       5725.630       5715.764          2.573          0.000
PART                21        14076.2680       5326.346       5316.563          2.846          0.000
PART                18         5186.0090       4589.195       4493.980         88.907          0.000
PART                11         3572.2840       2976.655       2835.723         68.818         66.593
```

Figure 343. Connect Transit Summary Extract: Simple SQL query by transaction

Calculating averages

The following query summarizes all transactions, grouping by Transaction Code and calculating the average time for each elapsed time field.

```
SELECT CTSTC                                              AS TRANSACTION_CODE,
       INTEGER(SUM(CTSTRAN#))                             AS TRANSACTION_COUNT,
       DECIMAL(SUM(CTSELRS)/1000,13,4)                    AS RESPONSE_TOTAL,
       DECIMAL((SUM(CTSELRS)/SUM(CTSTRAN#))/1000,10,3)    AS RESPONSE_AVERAGE,
       DECIMAL((SUM(CTSELIN)/SUM(CTSTRAN#))/1000,10,3)    AS PRE_OTMA_AVERAGE,
       DECIMAL((SUM(CTSELRD)/SUM(CTSTRAN#))/1000,10,3)    AS READ_SOCK_AVERAGE,
       DECIMAL((SUM(CTSELRX)/SUM(CTSTRAN#))/1000,10,3)    AS READ_EXIT_AVERAGE,
       DECIMAL((SUM(CTSELSF)/SUM(CTSTRAN#))/1000,10,3)    AS SAF_AVERAGE,
       DECIMAL((SUM(CTSELPR)/SUM(CTSTRAN#))/1000,10,3)    AS OTMA_AVERAGE,
       DECIMAL((SUM(CTSELXX)/SUM(CTSTRAN#))/1000,10,3)    AS XMIT_EXIT_AVERAGE,
       DECIMAL((SUM(CTSELAR)/SUM(CTSTRAN#))/1000,10,3)    AS ACK_READ_AVERAGE,
       DECIMAL((SUM(CTSELCF)/SUM(CTSTRAN#))/1000,10,3)    AS CONFIRM_AVERAGE,
       DECIMAL((SUM(CTSELOT)/SUM(CTSTRAN#))/1000,10,3)    AS POST_OTMA_AVERAGE
FROM IPICONS.CTSUMM
GROUP BY CTSTC
ORDER BY CTSTC
```

This query produces output like the following.

```
                                                                 PRE
TRANSACTION  TRANSACTION          RESPONSE       RESPONSE        OTMA           SOCK           EXIT            SAF
   CODE        COUNT               TOTAL         AVERAGE        AVERAGE        AVERAGE        AVERAGE        AVERAGE
-----------  -----------  ----------------  -------------  -------------  -------------  -------------  -------------
DSPALLI             111        72735.2050        655.272        371.566        365.445          0.165          0.000
DSPINV              11                                            646        324.598          0.139          0.000
PART                28 TRANSACTION  TRANSACTION          RESPONSE   089        334.929          0.660          0.233
```

Figure 344. Connect Transit Summary Extract: SQL query reporting averages

Calculating peak percentiles

Peak Percentile is a statistical estimate (based on the Normal Distribution) that provides an upper limit value of when nn% of tasks completed processing. Peak Percentiles allow you to measure whether workload targets are being met.

Peak Percentiles are calculated using the formula:

```
Factor*Standard Deviation+Average
```

The following table shows the Factors for each 5 percentile greater than 50% (the average):

Factor	Peak Percentile
0.126	55%
0.253	60%
0.385	65%
0.524	70%
0.674	75%
0.842	80%
1.036	85%
1.282	90%
1.645	95%

The following query calculates the 90% peak percentile of elapsed time fields. The CASE statements show the function required to calculate peak percentiles. Calculations use a Factor of 1.282 for 90%.

```
SELECT CTSTC                                          AS TRANSACTION_CODE,
       INT(SUM(CTSTRAN#))                             AS TRANSACTION_COUNT,
       CASE WHEN (SUM(CTSTRAN#) > 1) THEN
         DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELRS2)/1000000)
                          -POWER(SUM(CTSELRS)/1000,2))
                          /(SUM(CTSTRAN#)*(SUM(CTSTRAN#)-1))))
                          +(SUM(CTSELRS)/SUM(CTSTRAN#))/1000,13,3)
         ELSE DEC((SUM(CTSELRS)/SUM(CTSTRAN#))/1000,10,3)
       END                                            AS RESPONSE_PEAK90,
       CASE WHEN (SUM(CTSTRAN#) > 1) THEN
         DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELIN2)/1000000)
                          -POWER(SUM(CTSELIN)/1000,2))
                          /(SUM(CTSTRAN#)*(SUM(CTSTRAN#)-1))))
                          +(SUM(CTSELIN)/SUM(CTSTRAN#))/1000,13,3)
         ELSE DEC((SUM(CTSELIN)/SUM(CTSTRAN#))/1000,10,3)
       END                                            AS PRE_OTMA_PEAK90,
       CASE WHEN (SUM(CTSTRAN#) > 1) THEN
         DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELRD2)/1000000)
                          -POWER(SUM(CTSELRD)/1000,2))
                          /(SUM(CTSTRAN#)*(SUM(CTSTRAN#)-1))))
                          +(SUM(CTSELRD)/SUM(CTSTRAN#))/1000,13,3)
         ELSE DEC((SUM(CTSELRD)/SUM(CTSTRAN#))/1000,10,3)
       END                                            AS READ_SOCKET_PEAK90,
       CASE WHEN (SUM(CTSTRAN#) > 1) THEN
         DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELRX2)/1000000)
                          -POWER(SUM(CTSELRX)/1000,2))
                          /(SUM(CTSTRAN#)*(SUM(CTSTRAN#)-1))))
                          +(SUM(CTSELRX)/SUM(CTSTRAN#))/1000,13,3)
         ELSE DEC((SUM(CTSELRX)/SUM(CTSTRAN#))/1000,10,3)
       END                                            AS READ_EXIT_PEAK90,
       CASE WHEN (SUM(CTSTRAN#) > 1) THEN
         DEC((&PEAK*SQRT(((SUM(CTSTRAN#)*SUM(CTSELSF2)/1000000)
                          -POWER(SUM(CTSELSF)/1000,2))
                          /(SUM(CTSTRAN#)*(SUM(CTSTRAN#)-1))))
                          +(SUM(CTSELSF)/SUM(CTSTRAN#))/1000,13,3)
         ELSE DEC((SUM(CTSELSF)/SUM(CTSTRAN#))/1000,10,3)
       END                                            AS SAF_PEAK90
FROM IPICONS.CTSUMM
GROUP BY CTSTC
ORDER BY CTSTC
```

This query produces output like the following:

```
                                          PRE             READ            READ
TRANSACTION  TRANSACTION         RESPONSE OTMA            SOCKET          EXIT            SAF
   CODE        COUNT              PEAK90  PEAK90          PEAK90          PEAK90          PEAK90
----------  -----------  ----------------  ---------------  ----------------  ----------------  ---------------
DSPALLI             111        29928.674       13599.108       13235.167           42.412           0.000
DSPINV              111        32727.816       17237.198       16552.236           27.029           0.000
PART                285        50882.091       23939.055       23756.950          152.333         109.671
```

Figure 345. Connect Transit Summary Extract: SQL query reporting peak percentiles

Connect List extract

The Connect List Extract lists transaction transit activity in a similar way to the Connect Transit Log report.

List record format

The List Extract record has the following format.

```
CTLLIST          CEX Transaction List Record

CTLDATE    CL10   Tran Date 'yyyy-mm-dd'
CTLDATES   CL1    Separator '-'
CTLTIME    CL14   Tran Time 'hh.mm.ss.thmiju'
CTLTC      CL8    Transit Code

CTLUSID    CL8    User ID
CTLDSORG   CL8    Datastore (Original)
CTLDSTGT   CL8    Datastore (Target)
CTLCLID    CL8    Client ID
CTLTPIPE   CL8    TPIPE name
CTLPORT    CL5    Port Number

CTLREJE    CL1    R = Transaction rejected
CTLIMO     CL1    T = Transaction timeout
CTLFAIL    CL1    F = Transaction failed
CTLCLACK   CL1    A = Client sent ACK
CTLCLNAK   CL1    N = Client sent NAK
CTLOTNAK   CL1    O = OTMA NAK
CTLRTPIP   CL1    N = RESUME TPIPE NOAUTO command
                  A = RESUME TPIPE AUTO   command
                  S = RESUME TPIPE SINGLE command

           Transit Elapsed times (microseconds)
CTLELIN    XL8    Pre-OTMA
CTLELRD    XL8    Input READ Socket
CTLELRX    XL8    Message Exit READ
CTLELSF    XL8    SAF
CTLELPR    XL8    Processing by OTMA
CTLELXX    XL8    Message Exit XMIT
CTLELAR    XL8    Acknowledgement READ Socket
CTLELCF    XL8    Transaction Confirm
CTLELOT    XL8    Post-OTMA
CTLELRS    XL8    Response time

           Transaction counters
CTLCACK#   XL2    Client ACK count
CTLCNAK#   XL2    Client NAK count
CTLONAK#   XL2    OTMA NAK count
CTLRTPI#   XL4    Resume Tpipe message count
CTLPTDEP   XL4    Port depth

CTLNAKSC   XL2    OTMA NAK Sense Code
CTLTIMOV   XL2    Timeout value (seconds)
CTLTIRM    XL1    Timeout value (raw)
CLTTIMOC   CL8    Timeout value (character)
CTLIPADR   CL39   IP Address
```

Figure 346. Format of Connect Transit List Extract record

Sample DB2 jobs

The following sample DB2 jobs are supplied in the SIPISAMP library:

- Sample DDL job IPICLDDL
- Sample Load job IPICLLOD
- Sample SQL queries IPICQML1 and IPICQML2

Ten worst response times

You can use a DB2 SQL query to highlight the top ten worst response times.

```
SELECT CTLTC                     AS "TRANSACTION_CODE",
       TIME(CTLTIME)             AS "START TIME",
       DECIMAL(CTLELRS/1000,8,2) AS "RESPONSE_AVERAGE",
       DECIMAL(CTLELIN/1000,8,2) AS "PRE_OTMA_AVERAGE",
       DECIMAL(CTLELSF/1000,8,2) AS "SAF_AVERAGE",
       DECIMAL(CTLELPR/1000,8,2) AS "OTMA_AVERAGE",
       DECIMAL(CTLELCF/1000,8,2) AS "CONFIRM_AVERAGE",
       DECIMAL(CTLELOT/1000,8,2) AS "POST_OTMA_AVERAGE",
       DECIMAL(CTLELXX/1000,8,2) AS "EXIT_XMIT_AVERAGE",
       DECIMAL(CTLELAR/1000,8,2) AS "READ_SOCK_AVERAGE"
FROM IPICONL.CONLIST
ORDER BY CTLELRS DESC
FETCH FIRST 10 ROWS ONLY
OPTIMIZE FOR 10 ROWS
```

This query produces output like the following:

```
                                     PRE                                                POST        EXIT        READ
TRANSACTION            RESPONSE     OTMA         SAF         OTMA      CONFIRM         OTMA        XMIT        SOCK
   CODE     START TIME  AVERAGE    AVERAGE     AVERAGE     AVERAGE     AVERAGE      AVERAGE     AVERAGE     AVERAGE
----------- ---------- ----------- ----------- ----------- ----------- ----------- ----------- ----------- -----------
PART        15.26.25      5519.16     268.38        0.00       57.98     5149.02       43.77        0.17     5131.11
PART        16.58.11      2988.95    1895.00        0.00     1088.74        0.00        5.20        0.11        0.00
PART        16.58.11      2943.25    1808.59        0.00     1130.77        0.00        3.88        0.13        0.00
PART        16.58.11      2907.06    1846.99        0.00     1058.05        0.00        2.01        0.11        0.00
PART        16.58.11      2823.57    1836.53        0.00      976.59        0.00       10.45        0.12        0.00
PART        16.58.11      2760.14    1825.13        0.00      923.77        0.00       11.23        0.12        0.00
PART        16.58.11      2712.31    1873.00        0.00      830.20        0.00        9.10        0.14        0.00
PART        16.58.11      2670.28     288.92        0.00     2329.58        0.00       51.77        0.11        0.00
PART        16.58.11      2622.52    1764.89        0.00      818.24        0.00       39.38        0.05        0.00
PART        16.58.11      2412.90    1688.80        0.00      719.75        0.00        4.35        0.13        0.00
```

Figure 347. Connect Transit List Extract: SQL query reporting 10 worst response times

Chapter 40. IMS Tools Knowledge Base

IBM IMS Tools Knowledge Base (IMS Tools KB) is an IMS Tools product that allows you to store, manage, and access reports that are generated by any tool product that has been enabled and registered to participate in an IMS Tools Knowledge Base information management environment. It provides a common information management service that allows the sharing of data generated by multiple tool products within a sysplex from a single, centralized interface.

What does IMS Tools Knowledge Base do?

IMS Tools Knowledge Base provides centralized storage, access, and management of reports generated by IMS Tools.

IMS database administration responsibilities can include ensuring the availability and maintenance of many hundreds or thousands of databases. These database administration tasks require the services of many tools to perform backup, reorganization, and analysis operations. Reports that are generated by the tools during these operations can provide valuable information, such as documenting the success of tool execution or reporting statistics on the state of a database at that time.

Most of these reports are valuable to you long after they are generated. The reports, and the data that is provided in these reports, allow you to better utilize the rich information that is produced by the tools. Typically, however, most reports are deleted because there is no useful way to save and organize them.

With its common report repository and viewing interface, IMS Tools Knowledge Base can provide centralized report storage, access, and management capabilities for a complex sysplex environment. IMS Tools Knowledge Base becomes the single platform within a sysplex environment for multiple IMS Tools products to share report output.

IMS Tools KB features and benefits

IMS Tools KB provides a central repository for reports generated by IMS Tools.

IMS Tools KB provides the following features:

- A central repository for automatically collecting output reports that are generated by participating IMS Tools products
- Support for multiple IMS Tools products that are enabled for and registered with the IMS Tools KB environment
- An interactive user interface (ISPF) with extensive and flexible search capabilities to quickly locate the reports that you need and then display them from anywhere in the sysplex environment
- Report history retention, to provide a history of database analysis and actions taken

IMS Tools KB provides the following benefits:

- One central report repository that is shared by all registered IMS Tools products in a sysplex and that provides convenient report administration
- Preservation of data for future trend analysis and decision making

- Access to historical report data for accurate decision making
- Report retention policy based on user-defined criteria, such as the number of days and the number of versions of a report
- Report retention policy customized for individual tools or individual reports
- Automatic report deletion, after a report is expired

IMS Tools KB setup for IMS Performance Analyzer reports

IMS Performance Analyzer is registered as a product (PRODUCTID=IP). All fixed-format reports are registered. Also, generic report definitions are registered for ten LIST and ten SUMMARY form-based reports and five user-written log reports.

If the Product Definition Table (PDT) is updated, run the sample job IPIDITKB to load it into the IMS Tools Knowledge Base repository. See "IMS Tools Knowledge Base setup" on page 749.

Related reading: For information about how to install and configure IMS Tools KB, see "Configuring IMS Tools Knowledge Base" in the *IMS Tools Knowledge Base for z/OS User's Guide*. For information about how to register more reports, such as more user-defined form-based reports, see "Registering products and reports".

To display the list of products that are available in the IMS Tools Knowledge Base, select from the action bar menu **Administration** > **2. List Installed Products.**

```
  View  Help
------------------------------------------------------------------------------
SERVER: IPIXCFSV              Installed Products List         Row 1 to 2 of 2
Command ===> _____________________________________________ Scroll ===> CSR

Select a row action or press End to exit.

Row Actions: S Subs List RP Remove Product RR Remove Release RS Remove Subs


Act  Product Name                                          Product Release
S    IMS Performance Analyzer for z/OS                     040400
__   IVP PRODUCT                                           010101
```

Figure 348. IMS Tools KB: Installed products

Enter **S** to view the list of reports defined for IMS Performance Analyzer.

Scroll down to view the full list. The following figure shows the reports at the end of the list.

```
  Global_Actions  View  Help
--------------------------------------------------------------------------------
SERVER: IPIXCFSV              Report Subscriptions List     Row 33 to 66 of 66
Command ===> _____________________________________________ Scroll ===> CSR

Select a row action or press End to exit.

Row actions: U Update

Product Name . . : IMS Performance Analyzer for z/OS
Product Release  : 040400

                                  ----- Retention ------
Act Report Title                  Days  Versions Default Record Repository
__  Form-based Summary 8          ___30 ____7    Y       Y      N/A_____
__  Form-based Summary 9          ___30 ____7    Y       Y      N/A_____
__  FP Buffer Usage               ___30 ____7    Y       Y      N/A_____
__  FP Database CALL              ___30 ____7    Y       Y      N/A_____
__  FP Exception List             ___30 ____7    Y       Y      N/A_____
__  FP Exception Summary          ___30 ____7    Y       Y      N/A_____
__  FP Resource & Contention      ___30 ____7    Y       Y      N/A_____
__  FP Transit Analysis           ___30 ____7    Y       Y      N/A_____
__  FP Transit Log                ___30 ____7    Y       Y      N/A_____
__  Internal Resource Usage       ___30 ____7    Y       Y      N/A_____
__  IFP Region Occupancy          ___30 ____7    Y       Y      N/A_____
__  Log Cold Start Analysis       ___30 ____7    Y       Y      N/A_____
__  Log/Journal Gap Analysis      ___30 ____7    Y       Y      N/A_____
__  Management Exception          ___30 ____7    Y       Y      N/A_____
__  Message Queue Utilization     ___30 ____7    Y       Y      N/A_____
__  MSC Statistics                ___30 ____7    Y       Y      N/A_____
__  OSAM Sequential Buffering     ___30 ____7    Y       Y      N/A_____
__  Region Histogram              ___30 ____7    Y       Y      N/A_____
__  Resource Availability         ___30 ____7    Y       Y      N/A_____
__  System Checkpoint             ___30 ____7    Y       Y      N/A_____
__  Trans DLI Call Summary        ___30 ____7    Y       Y      N/A_____
__  Trans Resource List           ___30 ____7    Y       Y      N/A_____
__  Trans Resource Summary        ___30 ____7    Y       Y      N/A_____
__  Transit Analysis              ___30 ____7    Y       Y      N/A_____
__  Transit Exception             ___30 ____7    Y       Y      N/A_____
__  Transit Graphic Summary       ___30 ____7    Y       Y      N/A_____
__  Transit Log                   ___30 ____7    Y       Y      N/A_____
__  Transit Statistics            ___30 ____7    Y       Y      N/A_____
__  User Log Report 1             ___30 ____7    Y       Y      N/A_____
__  User Log Report 2             ___30 ____7    Y       Y      N/A_____
__  User Log Report 3             ___30 ____7    Y       Y      N/A_____
__  User Log Report 4             ___30 ____7    Y       Y      N/A_____
__  User Log Report 5             ___30 ____7    Y       Y      N/A_____
__  VSO Statistics                ___30 ____7    Y       Y      N/A_____
```

Figure 349. IMS Tools KB: Registered IMS PA reports

Related tasks:

"Run Log Report Set" on page 291
The IMS PA dialog generates the JCL for batch report processing. Enter the RUN command to run your Report Set, Report Category or individual reports.

Loading IMS Performance Analyzer reports into IMS Tools KB

When you submit a Log Report Set, to redirect the output to the IMS Tools Knowledge Base, select the run-rime option **Write to the ITKB repository** and specify the ITKB server name.

About this task

Related reading: For information about how to import reports into the IMS Tools KB, see "Managing reports" in the *IMS Tools Knowledge Base for z/OS User's Guide*.

Viewing IMS Performance Analyzer reports using IMS Tools KB

After loading your reports into the IMS Tools KB, you can use the IMS Tools KB ISPF dialog to find and view them.

Procedure

1. From the IMS Tools Knowledge Base primary option panel, select option 6 to display the list of reports.

```
  Administration  Help
------------------------------------------------------------------------------
SERVER: IPIXCFSV            IMS Tools Knowledge Base           Ver 1.5.0
Option ===> 6

Select an option or press END to exit.


*Knowledge Base Server Name . . . . IPIXCFSV
 Recon ID . . . . . .                      *History (y/n) N

Display Database Report Output
1  List of databases with reports
2  List of DDnames with reports
3  List of IMS Systems with reports
4  List of Report jobs
5  List of Report types
6  List of Reports
7  List of Products
8  List reports using selection criteria
9  List of all reports available
10 List of recently viewed reports
11 Exit
```

Figure 350. IMS Tools KB: Primary option panel

The list of reports that have been loaded into the IMS Tools Knowledge Base is displayed.

```
  View  Help
------------------------------------------------------------------------------
SERVER: IPIXCFSV                    Report List                Row 1 from 6
Command ===> ____________________________________________ Scroll ===> CSR

Select a row action or press END to exit.

Row actions: S - List
A Product         Report Title
_ IMSPA           FORM LIST 1
_ IMSPA           FORM LIST 2
_ IMSPA           FORM LIST 3
S IMSPA           FORM SUMMARY 1
_ IVP PRODUCT     IVP REPORT
_ IMSPA           USER LOG REPORT 1
```

Figure 351. IMS Tools KB: List of report types

2. Select an IMS PA report. The list of occurrences of this report is displayed.

```
  View  Help
------------------------------------------------------------------------------
SERVER: IPIXCFSV            Available Reports - Reports           Row 1 from 1
Command ===>                                                   Scroll ===> CSR

Select a row action or press END to exit.

Row actions: S - View J - Job T - Step H - History P - Print D - Delete
             I - Info A - Archive
Act DBD      Area/Part DD       Set  Recon ID IMS ID  Grp Type Grp Name
S                      SUMM0001      NORECON
```

Figure 352. IMS Tools KB: List of available reports of selected type

3. Select a report from the list to display its contents.

```
                                                    IMS Performance Analyzer
                                                     MSC Summary Report
                                                    ____________________________

SUMM0001 Printed at 16:48:37 10Jun2008     Data from 09.19.52 02Apr2008 to 10.34.55

                                          Avg        Avg        Avg        Avg  ...
              Tran      MSC      MSC       CPU     InputQ    Process    OutputQ
Trancode     Count FrontEnd  BackEnd      Time       Time       Time       Time
IVTCB            2   50.00%   50.00%   117.117 15.729.610     44.543          -
IVTCV           78   55.13%   44.87%     1.685      0.827     22.975      1.164
IVTCX           25   28.00%   28.00%     7.295      8.687     49.542      1.192
IVTNO          130   47.69%   45.38%     1.258 10.327.961     21.128      9.106
IVTNV          184   47.83%   47.83%         -  3.518.618     43.831      0.878
Total          419   47.97%   45.35%     5.534  4.879.439     33.539      3.519
```

Figure 353. IMS Tools KB: Actual report content

The IMS Tools Knowledge Base ISPF dialog provides a variety of methods for finding your reports, such as by selection criteria, by job, or by group.

Chapter 41. Glossary of Report Form field names

This glossary lists all the fields available to Form-based transit and OMEGAMON TRF message queue reporting.

The fields are listed alphabetically ignoring embedded spaces (in column headings).

The field name is that used in the Report Forms dialog. It is also the default DB2 column name used when exporting a Form-based extract to DB2. The default DB2 table name is the Report Form name.

The field name is also used in the FIELDS operand in the batch report commands as follows:

```
IMSPALOG LIST(...,FIELDS(field1,...))
IMSPACEX LIST(...,FIELDS(field1,...))
IMSPATRF LIST(...,FIELDS(field1,...))
IMSPALOG SUMMARY(...,FIELDS(field1,...))
IMSPACEX SUMMARY(...,FIELDS(field1,...))
IMSPATRF SUMMARY(...,FIELDS(field1,...))
```

Other details provided for each field are:

- Short and long description.
- Source of the field: IMS, IMS Connect, or TRF.
- Column heading used for reports and extracts.
- Where applicable, the corresponding global field in IMS Problem Investigator.

For an explanation of other terms and abbreviations used in this book, refer to the index, the IMS Glossary, or to the following web page:

http://www.ibm.com/software/globalization/terminology

A

ABEND Code
See COMPCODE

ABENDCNT
For Form-based summary reporting only, the number of abending transactions that were accumulated in the key range. *See also* TRANCNT.

Source: IMS and ATF

Column heading: `Abend Count`

ACKREAD
Acknowledgement read socket time. The total elapsed time for all read Socket Events issued after the response from OTMA has been sent to the client. This is the time taken to read the acknowledgement from the client.

Source: IMS Connect

Column heading: `ReadSock Ack Time`

APPC APPC indicator. Indicates whether the transaction originated from APPC. Reported values are:

APPC Implicit APPC using the IMS message queue
CPIC Explicit CPI-CI APPC using program schedule and APPC verbs
blank Transaction is not APPC

Source: IMS

Column heading: `APPC`

Applictn Grp Name
See APPLNAME

APPLNAME
Application grouping name provided by the Transaction Substitution exit.

Source: IMS

Column heading: `Applictn Grp Name`

ApplResp Time(R0)
See R0TIME

ASIO Waits
See FPASIOWT

ASYNC Rd-Ahead
See FPASIORA

B

BALG Q Count
See FPBALGCT

BMPCHKID
The BMP user checkpoint id.

Column heading: `BMP Chkpt ID`

BMPCHKPT
The number of checkpoints issued by the BMP, or the unit of work.

See also BMPSYNCP

Column heading: `BMP Chkpt Ct`

BMPSYNCP
The number of syncpoints issued by the BMP, or the unit of work.

See also BMPCHKPT

Column heading: `BMP Sync Cnt`

C

CEXcm Level
See COMPLVLC

CI Lock WAITS
See FPCILWT

CICSAPPL
CICS generic APPLID.

For CICS-DBCTL only, the generic APPLID of the CICS region that scheduled this thread.

The APPLID is extracted from the first 8 characters of the IMS recovery token.

CICSTASK
CICS task number. For CICS-DBCTL only, the task number of the CICS transaction that scheduled this DBCTL thread.

In CICS Performance Analyzer, the associated CMF field is TRANNUM DFHTASK P031 and is reported using field name TASKNO.

You can use the CICS task number to match transactions in the CICS and IMS reports.

The CICS transaction name and task number are available in the IMS 08 log record. For details, see the IMS-supplied macro SDFSMAC(DFSLOG08).

Source: IMS

Column heading: `CICS Task ID`

CLASS
Transaction Class. Transaction class as specified in the TRANSACT macro MSGTYPE parameter.

Source: IMS and TRF

Column heading: `Cls`

CLIACK
Client acknowledgement indicator. Indicates how the IMS Connect transaction client acknowledged the transaction results from IMS. Reported values are:

ACK Client positively acknowledged (ACK)
NAK Client negatively acknowledged (NAK)
blank Transaction was not Synch Level=CONFIRM

Source: IMS Connect

Column heading: `Cli ACK`

CLIENTID
Client ID. IMS Connect Client ID.

Source: IMS Connect

Column heading: `Client ID`

IMS Problem Investigator global field: `ClientID`

Cls *See* CLASS

CM0DELAY
OTMA Commit Mode 0 (Commit-Then-Send) client ACK time. For OTMA Commit Mode 0 transactions only, the time it takes the client to acknowledge the response back to IMS. The elapsed time is calculated from when the output message is sent (Comms 31) to when the client acknowledgement is received and dequeued (36). This is a part of transaction processing time and can include the following:

- XCF overhead
- OTMA client (Connect) processing overhead and wait for client acknowledgement

Source: IMS

Column heading: `CM0Delay Time`

CM1DELAY
OTMA Commit Mode 1 (Send-Then-Commit) delay time. For OTMA Commit Mode 1 transactions only, the delay in processing after the output

message has been sent to OTMA. The delay elapsed time is from when the output message is sent (03/31) to when the transaction commences syncpoint processing (5610). This delay is a part of transaction processing time and can include the following:

- XCF overhead
- For Synch Level=CONFIRM only, OTMA client (Connect) processing overhead and wait for client acknowledgement

Source: IMS

Column heading: `CM1Delay Time`

COMMITMD

Commit mode. IMS Connect Commit mode. Reported values are:

0 Commit mode 0, also called Commit-Then-Send

1 Commit mode 1, also called Send-Then-Commit

blank Not an IMS Connect transaction

Source: IMS Connect

Column heading: `Commit mode`

Commit SDEP CIs

See FPSDEPCI

Commit SDEP Seg

See FPSDEPSG

COMPCODE

Completion Code. Transaction abend completion code.

Source: IMS and TRF

Column heading: `ABEND Code`

COMPLVL

IMS transaction completion level. IMS PA assigns a completion level to every transaction. Form-based reporting can specify a minimum completion level, instructing IMS PA to report only those transactions that have reached this level of completion. The IMS transaction completion levels are:

0 IMS message is a message switch or generated output message, not a transaction. Use Completion level 0 to analyze all message queue activity, not when transaction transit information is required.

1 Transaction input message enqueued onto the IMS message queue. Use Completion level 1 to analyze transaction message queue activity, not when transaction transit information is required.

2 Transaction has started processing in the dependent region but has not completed processing. Only input queue time is available for reporting.

3 Transaction has finished processing in the dependent region but has not sent the output message to the destination LTERM. Input queue and processing times are available for reporting.

4 Transaction has ended but resource utilization statistics (from the type 07 application termination record) are not available, possibly due to WFI processing (schedule not ended). Input queue, processing, output queue and total times are available for reporting.

5 Transaction has ended and resource utilization statistics (from the type 07 application termination record) are available, and are *approximations* only. Type 07 application termination record

statistics are apportioned equally amongst all transactions processed by the program schedule. All application statistics fields are available for reporting.

6 Transaction has ended and accurate resource utilization statistics are available. For Unit-of-Recovery (UOR) transactions, resource utilization statistics are derived from the type 56FA transaction-level accounting record. This record provides accurate and reliable information for each Unit-of-Recovery (UOR). Resource statistics for transactions reported over the entire schedule are taken from the type 07 record. This includes DBCTL, ODBM, and non-message driven BMP transactions.

All application statistics fields are available for reporting.

Source: IMS

Column heading: `Comp Level`

COMPLVLC

Connect transaction completion level. IMS Connect transaction completion level. IMS PA assigns a completion level to every transaction. Form-based reporting can specify a minimum completion level, instructing IMS PA to report only those transactions that have reached this level of completion. The Connect transaction completion levels are:

0 IMS Connect non-transactional message initialized. Use Completion level 0 to analyze all activity.

1 IMS Connect transactional message initialized. Use Completion level 1 to analyze messages rejected by the message exit.

2 IMS Connect Message sent to OTMA for processing.

3 IMS Connect Message received from OTMA. This level may also indicate an OTMA timeout or error.

4 Transaction has completed Connect processing.

Source: IMS Connect

Column heading: `CEXcm Level`

CONFIRM

Client Confirm time. For Sync Level CONFIRM transactions only, the elapsed time from when OTMA completed processing the input message to when the ACK response from the client is sent back to OTMA.

Source: IMS Connect

Column heading: `Confirm Time`

CONFOTMA

OTMA ACK processing time. For Sync Level CONFIRM transactions, the time Connect waits for the ACK transaction to be processed by IMS and send the response back.

Source: IMS Connect

Column heading: `OTMAconf Time`

Conn RTp Time

See OUTRTCON

Connect Logon Token

See CONNLTOK

Connect System

See HWSID

CONNLTOK
Connect Logon token. IMS Connect logon token.

Source: IMS and IMS Connect

Column heading: `Connect Logon Token`

IMS Problem Investigator global field: `LogToken`

CONNOTOK
Connect Resume-Tpipe Orig Message logon token. IMS Connect logon token of the originating input message taken from the first IMS Connect event 58 (IMS Hold Queue Compensation) record encountered in the IMS Connect transaction.

Source: IMS Connect

Column heading: `Resume Tpipe Orig Msg Token`

CON Resp Time
See RESPCON

CON Tran Start
See STARTCON

Conv *See* CONVERS

CONVERS
Conversational transaction indicator. Indicates whether a transaction is conversational as defined in the TRANSACT macro SPA parameter. Reported values are:

C Conversational
N Non-conversational
blank Not a message queue transaction

Source: IMS

Column heading: `Conv`

CPUSU

Program execution CPU time reported in service units. The service unit normalizes the reporting of CPU time to allow for performance comparisons between, for example, an older processor and a newer processor in terms of CPU effort. CPU service unit reporting is only available in Form-based transit reports.

The CPUSU is calculated as CPUTIME * conversion factor. When IMS PA is running on the same system that generated the IMS log input file, the conversion factor can be calculated at run-time. Otherwise the conversion factor must be supplied to IMS PA in the command input as `IMSPALOG SYSTEM(`*`name`*`,V`*`vrm`*`,`*`factor`*`)`.

The conversion factor for each IMS system should be specified in your batch JCL:

1. Use the IPICPUSU REXX EXEC located in the SIPIEXEC library to calculate the conversion factor and generate the batch command:

```
* IBM IMS Performance Analyzer: CPU time to Service Units conversion
*
* SYSID: XYZ1
*
* CPU VV --ID-- Model  Speed  Specialty
*   0 00 039A37 2818   1.000
*   1 00 039A37 2818   1.000
*   2 00 039A37 2818   1.000  zIIP
```

```
*
* Adjustment values: RMCTADJC=718 RMCTCPU=4097
*
* Formula: SUSEC = 1000000 / (RMCTADJC * 256 / RMCTCPU)
* Result : 1 CPU second = 22289.563 Service Units
*
* The following IMSPA batch command will convert CPU time to SUs:
  IMSPALOG SYSTEM(name,Vvrm,22289.563)
```

You can specify a conversion factor of CURRENT to instruct IMS PA to calculate the conversion factor at run time, based on the processor where IMS PA is executing. If you do not specify a conversion factor, IMS PA will use CURRENT.

2. Specify the command generated by step 1 in your batch JCL, for example:

```
//IMSPA JOB (ACCOUNT),'NAME'
//*
//IMSPA   EXEC PGM=IPIMAIN,PARM='V151'
//STEPLIB  DD DISP=SHR,DSN=IMSPA.V4R4M0.SIPILINK
//SYSPRINT DD SYSOUT=*
//LOLD1001 DD DISP=SHR,DSN=IMS.OLD1.SLDS
//LNEW1001 DD DISP=SHR,DSN=IMS.NEW1.SLDS
//IPIOPTS  DD  *
* IMS System Definitions
 IMSPALOG SYSTEM(OLD1,V141,14637.212)
 IMSPALOG SYSTEM(NEW1,V151,22289.563)
/*
//IPICMD   DD *
  IMSPALOG LIST(SECGROUP,FIELDS(...,CPUSU,...))
  IMSPALOG SUMMARY(SECGROUP,FIELDS(...,CPUSU,...))
  IMSPALOG EXECUTE
/*
```

You must execute this REXX on the same system that created the IMS log file. The command generated by this REXX is then input into the IMS PA batch process.

Note: There is no provision for specialty processors.

Source: IMS and TRF

Column heading: CPUSU

CPUTIME

Program execution CPU time, approximation only at completion level 5, accurate at completion level 6.

At completion level 5 resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times.

At completion level 6, resource usage metrics for Unit-of-Recovery (UOR) transactions are obtained from the type 56FA transaction accounting record. Metrics for transactions reported over the entire schedule are obtained from the type 07 record. This includes DBCTL, ODBM and non-message driven BMP transactions (with BMPSYNC(NO)).

For Fast Path transactions, CPU time is available only at completion level 6 from the 56FA record.

See also DBGETS and DBUPDATS.Source: IMS and TRF.

Column heading: CPU Time

CPUZAAP
zAAP/zIIP execution time.

D

DATABASE
The DBD name of the database used by the transaction.

DATABASE is the list of databases updated by the transaction (derived from the x'50' full function and the x'5950' fast path data base update records) and read (checkpointed in the type x'18 log record).

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Source: IMS

Column heading: `Database DBD Name`

Database DBD Name
See DATABASE

DB AccM
See DBACMETH

DB Lock Time
See LOCKTIME

DB Org Type
See DBORGTYP

DBACMETH
Database access method. Reported values are:

CHKP BMP user checkpoint. CHKP is an indicator that the database has been read by the BMP.

DEDB Fast path data entry database

ESDS Entry-sequenced data set (VSAM)

KSDS Key-sequenced data set (VSAM)

OSAM
Overflow sequential access method

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `DB AccM`

DBBLKDEL
The number of block deletes for the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `DB Block Deletes`

DBBLKINS
The number of block inserts for the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `DB Block Inserts`

DBBLKREP
The number of block replaces for the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `DB Block Replaces`

DBBLKUPD
The number of block updates for the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `DB Block Updates`

DBCALLS
DB call count. Full function database call count, approximation only at completion level 5, accurate at completion level 6. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB Call Count`

DBCTLPRE
The elapsed time between the start of the CICS transaction and the IMS PSB being scheduled and ready to process DLI calls.

For programs that issue the EXEC DLI SCHEDULE at the start of processing, this measurement can provide an estimate of the time for a DBCTL thread to become available, and for IMS to schedule it.

This time is calculated as 08 suffix STCK - IMS recovery token STCK.

For CICS-DBCTL, the IMS recovery token is generated by CICS, and consists of two parts:
1. CICS APPLID
2. Unique recovery UOW identifier (STCK value recorded in CMF field RMUOWID DFHTASK T132)

DBDLET
Database DLET call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB DLET Count`

DBGETS
DB get call count. Full function database get call count, approximation only at completion level 5, accurate at completion level 6. Get calls are GU, GN, GNP, GHU, GHN, GHNP. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB Get Count`

DBGHN
Database Get Hold Next (GHN) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB GHN Count`

DBGHNP
Database Get Hold Next within Parent (GHNP) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB GHNP Count`

DBGHU
Database Get Hold Unique (GHU) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing

times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB GHU Count`

DBGN

Database Get Next (GN) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB GN Count`

DBGNP

Database Get Next within Parent (GNP) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB GNP Count`

DBGNS

Total database GN, GNP, GHN, and GHNP calls. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB GNx Count`

DBGU

Database Get Unique (GU) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB GU Count`

DBGUS

Total database GU and GHU calls. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB GUx Count`

DBIOCALL
Only available for IMS V10+. Total OSAM and VSAM database IO count, approximation only at completion level 5, accurate at completion level 6. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: `Total IO Count`

DBIOTIME
Only available for IMS V10+. Database IO elapsed time, approximation only at completion level 5, accurate at completion level 6. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: `DB IO Time`

DBISRT
Database ISRT call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB ISRT Count`

DBORGTYP
Database organization type.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `DB Org Type`

DBREPL
Database REPL call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB REPL Count`

DBUPDATS
DB update call count. Full function database update call count, approximation only at completion level 5, accurate at completion level 6. Update calls are ISRT, DLET, REPL. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB Updat Count`

DBUPRATE
The number of updates per second to the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `Updates/Second`

DBWAITS
DB wait count. Full function database wait count, approximation only at completion level 5, accurate at completion level 6. Waits can be for Test enqueues, Queue commands, Update and enqueues, Exclusive enqueues. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DB Wait Count`

DB2CPU
DB2 CPU time.

Source: TRF

Column heading: `DB2 CPU Time`

DCCALLS
DC message queue call count, approximation only at completion level 5, accurate at completion level 6. DC calls are GU, GN, ISRT, PURGE. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record (IMS V10+).

Source: IMS

Column heading: `DC Call Count`

DCGN
Message queue Get Next (GN) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record.

Statistics are apportioned equally among all transactions that executed under that schedule, regardless of their actual processing times. Therefore they are approximations only.

At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record, which provides accurate statistics for individual transactions.

Source: IMS

Column heading: `DB GN call count`

DCGU

Message queue Get Unique (GU) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record. Statistics are apportioned equally among all transactions that executed under that schedule, regardless of their actual processing times. Therefore they are approximations only.

At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record, which provides accurate statistics for individual transactions.

Source: IMS

Column heading: `DB GU call count`

DCISRT

Message queue Insert (ISRT) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record. Statistics are apportioned equally among all transactions that executed under that schedule, regardless of their actual processing times. Therefore they are approximations only.

At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record, which provides accurate statistics for individual transactions.

Source: IMS

Column heading: `DC ISRT call count`

DCPURG

Message queue Purge (PURG) call count. At completion level 5, resource usage metrics are obtained from the type 07 application termination record. Statistics are apportioned equally among all transactions that executed under that schedule, regardless of their actual processing times. Therefore they are approximations only.

At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record, which provides accurate statistics for individual transactions.

Source: IMS

Column heading: `DC PURG call count`

DDNAME

Input log DDname. The name specified in the JCL for the log containing the start record (usually X'01') for this transaction.

Source: IMS

Column heading: `IMS log DD name`

DEDBAREA
The DEDB area name of the database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `DEDB Area`

DEDB Get Count
See FPDEGET

DEDB Put Count
See FPDEPUT

Dest Tmember
See TMEMBERD

DLAYOTMA
OTMA delay time. The delay attributable to OTMA for an IMS Connect transaction. This elapsed time is a combination of two times:

1. From when IMS connect sends the transaction message to OTMA, to when the message is enqueued onto the IMS message queue.
2. From when the IMS transaction sends the response back to OTMA, to when IMS Connect receives the response back.

OTMA delay time can only be calculated when IMS Connect and IMS log data is merged. This is because both IMS Connect Extensions and IMS log records are required to calculate the elapsed time delay.

Source: IMS Connect

Column heading: `OTMADlay Time`

E

ESAFCALL
Total ESAF call count, approximation only at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: `ESAFcall Count`

ESAFCCON
The time of day when the external subsystem completed Commit Continue processing during the transaction syncpoint.

A transaction can use more than one external subsystem (for example, DB2 and the IBM MQ adapter). In this case there will be additional report lines for each subsystem used by the transaction.

Recommendation: When requesting this field, also include the ESAFNAME field in the form. This will identify the subsystem to which this field applies.

Source: IMS

Column heading: `Commit Cont Completed`

ESAFCOMT
The elapsed time it took for the external subsystem to complete Commit processing during the transaction syncpoint.

A transaction can use more than one external subsystem (for example, DB2 and the IBM MQ adapter). In this case there will be additional report lines for each subsystem used by the transaction.

Recommendation: When requesting this field, also include the ESAFNAME field in the form. This will identify the subsystem to which this field applies.

Source: IMS

Column heading: `Commit Time`

ESAFNAME
The name of the external subsystem used by the transaction.

A transaction can use more than one external subsystem (for example, DB2 and the IBM MQ adapter). In this case there will be additional report lines for each subsystem used by the transaction.

Source: IMS

Column heading: `External Sub-Sys`

ESAFPRE
The time of day when the external subsystem started Commit Prepare processing during the transaction syncpoint.

A transaction can use more than one external subsystem (for example, DB2 and the IBM MQ adapter). In this case there will be additional report lines for each subsystem used by the transaction.

Recommendation: When requesting this field, also include the ESAFNAME field in the form. This will identify the subsystem to which this field applies.

Source: IMS

Column heading: `Commit Prep Started`

EXITNAME
The user message exit name for an IMS Connect transaction. This exit name is extracted from the first "message exit returned from READ" event record (log code 3E) for the transaction.

Source: IMS Connect

Column heading: `Exit Name`

F

FAILED
Transaction failure indicator. The reason for an IMS or Connect transaction failure. Reported values are:

blank Transaction did not fail.
ABEND
Transaction abend (abnormal end of task).
CANCEL
Transaction cancelled.
REJECT
Transaction rejected.
SESSION
Connect transaction failed due to a session error.
SF=? Fast Path Syncpoint Failure, code = ?

Source: IMS, Connect, and TRF

Column heading: `Failure Reason`

Failure Reason
See FAILED

FFDB50
The number of full-function database update (type 50) log records cut by this transaction.

FLD Call Count
See FPFLD

FP SyncP Count
See FPSYNCCT

FPASIORA
Fast Path ASYNC Read-aheads. The number of UOW asynchronous read-aheads by HSSP or the High Speed DEDB Direct Reorganization utility in a transaction (one unit of work).

Source: IMS

Column heading: `ASYNC Rd-Ahead`

FPASIOWT
Fast Path Waits for ASIO. The number of UOW asynchronous read-aheads to complete by HSSP or the High Speed DEDB Direct Reorganization utility in a transaction (one unit of work). This number should be either zero or one.

Source: IMS

Column heading: `ASIO Waits`

FPBALGCT
Fast Path BALG Queue Count at Syncpoint. The number of transactions in the balancing group (BALG) queue when this transaction entered sync point processing.

Source: IMS

Column heading: `BALG Q Count`

FPBFOTHR
Fast Path Buffers sent to OTHREAD. The number of Fast Path buffers sent to OTHREAD.

Source: IMS

Column heading: `OTHREAD Buffers`

FPBFSTL
Fast Path Buffer steals per Tran. The number of times buffer stealing is invoked by this transaction.

Source: IMS

Column heading: `FPBuffer Steals`

FPBFWT
Fast Path Waits for Buffer. The number of times the transaction waited for a buffer to become available.

Source: IMS

Column heading: `FPBuffer Waits`

FPBUFFER Steals
See FPBFSTL

FPCALLS
Fast Path database call count. FP DB calls are GU, GN, GNP, GHU, GHN, GHNP, ISRT, DLET, REPL, FLD, POS. FP resource usage statistics are accurate, not approximations. FP cuts a 5937 syncpoint record for every MPP transaction that uses a Fast Path database.

Source: IMS

Column heading: `FP Call Count`

FPCILWT
Fast Path CI Lock IWAITs.

Source: IMS

Column heading: `CI Lock WAITS`

FPDB5950
The number of Fast Path database update (type 5950) log records cut by this transaction.

FPDDEPU
The number of Direct Dependent Segment updates for the Fast Path database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `DDEP Updates`

FPDECL
Fast Path DEDB call count. DL/I calls to DEDB databases.

Source: IMS

Column heading: `DEDB Calls`

FPDEGET
Fast Path DEDB Get count.

Source: IMS

Column heading: `DEDB Get Count`

FPDEPUT
Fast Path DEDB Put count.

Source: IMS

Column heading: `DEDB Put Count`

FPDLET
Fast Path database DLET call count.

Source: IMS

Column heading: `FP DLET Count`

FPFLD
Fast Path FLD call count.

Source: IMS

Column heading: `FLD Call Count`

FPGETS
Fast Path database get call count. FP DB get calls are GU, GN, GNP, GHU, GHN, GHNP. FP resource usage statistics are accurate, not approximations. FP cuts a 5937 syncpoint record for every MPP transaction that uses a FP database.

Source: IMS

Column heading: `FP Get Count`

FPGHN
Fast Path GHN call count. Fast Path database Get Hold Next (GHN) call count.

Source: IMS

Column heading: `FP GHN Count`

FPGHNP
Fast Path GHNP call count. Fast Path database Get Hold Next within Parent (GHNP) call count.

Source: IMS

Column heading: `FP GHNP Count`

FPGHU
Fast Path GHU call count. Fast Path database Get Hold Unique (GHU) call count.

Source: IMS

Column heading: `FP GHU Count`

FPGN Fast Path GN call count. Fast Path database Get Next (GN) call count.

Source: IMS

Column heading: `FP GN Count`

FPGNP
Fast Path GNP call count. Fast Path database Get Next within Parent (GNP) call count.

Source: IMS

Column heading: `FP GNP Count`

FPGNS
Fast Path GN + GNP + GHN + GHNP call count. Total of Fast Path database GN, GNP, GHN and GHNP calls.

Source: IMS

Column heading: `FP GNx Count`

FPGU Fast Path GU call count. Fast Path database Get Unique (GU) call count.

Source: IMS

Column heading: `FP GU Count`

FPGUS
Fast Path GUx call count. Total of Fast Path database GU and GHU calls.

Source: IMS

Column heading: `FP GUx Count`

FPISRT
Fast Path ISRT call count. Fast path database ISRT call count.

Source: IMS

Column heading: `FP ISRT Count`

FPMSCL
Fast Path MSDB call count. DL/I calls to MSDB databases.

Source: IMS

Column heading: `MSDB Calls`

FPNBFS
Fast Path NBA Value. The NBA (normal) buffer value specified in the region startup procedure.

Source: IMS

Column heading: `NBA Buffers`

FPNBFU
Fast Path NBA Buffers used. The number of NBA (normal) buffers used.

Source: IMS

Column heading: `NBA Used`

FPNRDBFU
Fast Path MSDB and SDEP buffers used. Number of buffers used by MSDB and SDEP processing.

Source: IMS

Column heading: `SDEP Buf Used`

FPOBFS
Fast Path OBA Value. The OBA (overflow) buffer value specified in the region startup procedure.

Source: IMS

Column heading: `OBA Buffers`

FPOBFU
Fast Path OBA Buffers used. The number of OBA (overflow) buffers used.

Source: IMS

Column heading: `OBA Used`

FPOTELAP
For transactions that update Fast Path DEDBs, the time taken to complete output thread (OTHREAD) processing.

OTHREAD is an asynchronous process that performs the updates to the Fast Path databases. Depending on delays, OTHREAD can complete before or after the end of transaction processing, but always independently.

It is calculated as 5612 suffix STCK - TPCPCLCK

FPPBFU
Fast Path PVT Buffers used. The number of private buffers used by HSSP or the High Speed DEDB Direct Reorganization utility in a transaction (one unit of work).

Source: IMS

Column heading: `PVT Buff Used`

FPPBFWT
Fast Path PVT Buffer Waits. The number of waits for private buffers by HSSP or the High Speed DEDB Direct Reorganization utility in a transaction (one unit of work).

Source: IMS

Column heading: `PVT Buff Waits`

FPPH1PH2
Fast Path Phase 1 + Phase 2 time. Fast Path Syncpoint Phase 1 + Phase 2 time.

Source: IMS

Column heading: `PH1+PH2 Time`

FPPOS
Fast Path POS call count.

Source: IMS

Column heading: `POS Call Count`

FPPRCTYP
Fast Path Process type. Fast Path Process type from the 5937/38 log record. Reported values are:
HSSP HSSP
Non-HSSP
Non-HSSP
Data-Cap
Data Capture Log written
Abort APPL Abort (Sent DFS2766I)
Java™ JAVA Application

Source: IMS

Column heading: `Process Type`

FPREPL
Fast Path REPL call count. Fast Path database REPL call count.

Source: IMS

Column heading: `FP REPL Count`

FPRTCODE
Fast Path Routing Code.

Source: IMS

Column heading: `Routing Code`

FPSDEPCI
Commit SDEP CI number used.

Source: IMS

Column heading: `Commit SDEP CIs`

FPSDEPI
The number of Sequential Dependent Segment inserts for the Fast Path database.

A transaction can update more than one database. In this case there will be additional report lines for each database used by the transaction.

Recommendation: When requesting this field, also include the DATABASE field in the form. This will identify the database to which this field applies.

Source: IMS

Column heading: `SDEP Inserts`

FPSDEPSG
Commit SDEP Segment used. Commit SDEP Segment number.

Source: IMS

Column heading: `Commit SDEP Seg`

FPSEMHQI
Fast Path Shared EMHQ Input time. Shared EMHQ Input time is the elapsed time a transaction input message spends on the shared EMH queue.

Source: IMS

Column heading: `SEMHQ Input`

FPSEMHQO
Fast Path Shared EMHQ Output time. Shared EMHQ Output time is the elapsed time a transaction output message spends on the shared EMH queue.

Source: IMS

Column heading: `SEMHQ Output`

FPSYNCCT
Fast Path Syncpoint count. The number of Fast Path synchronization points for a transaction. This value is a count of the following IMS log records for a transaction:
- X'5937' Fast Path synchronization point operation completed
- X'5938' Fast Path synchronization point operation was unsuccessful

Source: IMS

Column heading: `FP SyncP Count`

FPTOTIME
Fast Path Terminal Output time. Terminal output time is the elapsed time that the Fast Path transaction output message took to be sent to the terminal.

Source: IMS

Column heading: `OutTermQ Time`

FPUOWLWT
Fast Path UOW Lock IWAITs.

Source: IMS

Column heading: `UOW Lock WAITS`

FPUPDATS
Fast Path database update call count. FP DB update calls are ISRT, DLET, REPL. FP resource usage statistics are accurate, not approximations. FP cuts a 5937 syncpoint record for every MPP transaction that uses a FP database.

Source: IMS

Column heading: `FP Updat Count`

FPVSORFD
VSO Reads from Dataspace. The number of CI read requests satisfied from a dataspace or coupling facility structure.

Source: IMS

Column heading: `VSO Read Dataspce`

FPVSREAD
VSO Reads from DASD. The number of CIs read from DASD into a dataspace or coupling facility structure.

Source: IMS

Column heading: `VSO Read DASD`

FPVSWRIT
VSO Writes to DASD. The number of CIs with updates to a dataspace or coupling facility structure. This number represents the number of CIs that would have been sent to OTHREAD if the areas were non-VSO.

Source: IMS

Column heading: `VSOWrite DASD`

FPWAITS
Fast Path DB wait count. Fast Path database wait count. FP DB waits include waits for DEDB Buffers, CI locks, UOW locks. FP resource usage statistics are accurate, not approximations. FP cuts a 5937 syncpoint record for every MPP transaction that uses a FP database.

Source: IMS

Column heading: `FP Wait Count`

H

HWSID
IMS Connect system name.

Source: IMS Connect

Column heading: `Connect System`

I

ICALCNT
Sync Callout Message count. The number of IMS calls (DL/I ICAL calls) by this transaction. This number is taken from either the application terminate accounting (log code 07) record or the transaction-level statistics (log code 56FA) record.

IMSACK
IMS acknowledgement indicator. Indicates how the IMS Connect transaction was acknowledged by IMS. Reported values are:
ACK IMS positively acknowledged (ACK)
NAK IMS negatively acknowledged (NAK)
blank Transaction was not acknowledged by IMS

Source: IMS Connect

Column heading: `IMS ACK`

IMSID
Processing IMS ID. IMS subsystem ID where the transaction was processed.

Source: IMS and TRF

Column heading: `Proc IMS ID`

IMS Problem Investigator global field: `IMSID`

IMS log DD name
See DDNAME

IMSRel
See IMSVER

IMS Resp Time
See RESPIMS

IMS RTp Time
See OUTRTIMS

IMS RTp Tot Time
See TOTRTIMS

IMS Tran Start
See STARTIMS

IMSVER
Processing IMS Version. IMS Version of the system where the IMS transaction was processed.

Source: IMS and TRF

Column heading: `Proc Vers`

IMS Problem Investigator global field: `IMSRel`

Input Msg Len
See MSGLIN

INPUTQ
Input queue time. The elapsed time from when the input message is enqueued onto the message queue (01/35) to when the program starts processing the transaction (31 DLI).

Source: IMS and TRF

Column heading: `InputQ Time`

INREAD
Input read Socket time. The elapsed time taken for IMS Connect to read the incoming message from when the transaction input message enters IMS Connect (Read Prepare) to when IMS Connect has completed reading the message (final Read Socket).

Source: IMS Connect

Column heading: `ReadSock In Time`

IPADDR
IP Address. Client IP address, either IPv4 dot-decimal notation or IPv6 format.

Source: IMS Connect

Column heading: `IP Address`

J

JOBNAME
Region Jobname. Jobname of the dependent region that processed the transaction.

Source: IMS and TRF

Column heading: `Jobname`

L

LOCKMAX
The high water lock count for the Unit of Recovery. This shows the maximum number of locks held at any one time by a transaction, and can provide an insight as to whether database contention could be the cause of transaction delays.

In the case of a non-message driven BMP, the value is an aggregate count for the schedule, unless the BMPSYNC(YES) option is specified, in which case the lock count is for each BMP syncpoint interval.

For a Fast Path transaction the lock count is obtained from the x'5937' SYNCLKS field, otherwise the count is obtained from the x'3730' XFERLHLD field.

Source: IMS

Column heading: `High water lock count`

LOCKTIME
Database Locking elapsed time. Database Locking elapsed time, approximation only at completion level 5, accurate at completion level 6. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: `DB Lock Time`

LogToken
See CONNLTOK

LTERM
Input LTERM. The LTERM from where the incoming transaction was initiated. For a generated message, the LTERM is unavailable and the Userid is reported.

Source: IMS and TRF

Column heading: `Input LTERM`

IMS Problem Investigator global field: `LTerm`

LTERMOUT
Output LTERM. The LTERM to where the output message from the transaction is sent.

Source: IMS

Column heading: `Output LTERM`

LTERMOVR
Override LTERM. Override LTERM to where the output message from the transaction is sent.

Source: IMS and Connect

Column heading: `Override LTERM`

M

MSC MSC indicator. Indicates whether the transaction involved MSC. Reported values are:
FE Front-end MSC transaction, where the transaction originated
BE Back-end MSC transaction, where the transaction was processed
blank Not an MSC transaction

Source: IMS

Column heading: `MSC`

MSDB Calls
See FPMSCL

MSGLIN
Input Message length (including prefix). Input message length, including the message prefix. All type 01 records for the transaction input messages are accumulated to obtain the total input message length.

Source: IMS and TRF

Column heading: `Input Msg Len`

MSGLOUT
Output Message length (including prefix). Output message length, including the message prefix. All type 03 records for output messages issued by the transaction are accumulated to obtain the total output message length.

Source: IMS and TRF

Column heading: `Output Msg Len`

N

NBA Buffers
See FPNBFS

NBA Used
See FPNBFU

O

OBA Buffers
See FPOBFS

OBA Used
See FPOBFU

ORGIMS
Originating IMS ID. IMS subsystem ID where the IMS transaction originated For shared queue transactions, the transaction was processed by the IMS subsystem in field IMSID.

Source: IMS and IMS Connect

Column heading: `Org IMS ID`

ORGLTERM
Originating LTERM. Input LTerm of the originating transaction in the program switch sequence. For the first transaction in a program switch sequence, ORGLTERM is input LTerm. For subsequent transactions in the program switch sequence, ORGLTERM is blank for List reports and the originating LTerm for Summary reports.

Use ORGLTERM for Transit List-style reporting where you want to see the start of a program switch sequence, followed by the program switches in sequence.

ORGLTERM has special values for non-message driven transactions:

CICS-DBCTL
CICS APPLID (taken from the IMS recovery token)

BMP Job name

Source: IMS

Column heading: `Org LTERM`

ORGTRAN
Originating transaction code. Transaction Code of the originating transaction in the program switch sequence. Use ORGTRAN, TRANCODE and PGMSWIT (hidden) as keys for Form-based summary reporting when transit analysis is required. IMS PA will summarize transaction transit activity by grouping all transactions involved in program switching, in the sequence that they are processed.

Source: IMS and IMS Connect

Column heading: `Org Trancode`

ORGUOWID
Originating tracking unit of work (UOW) ID. Only the tracking token is reported, as this uniquely identifies a transaction in a sysplex. Field ORGIMS contains the UOW originating IMS subsystem ID.

Source: IMS

Column heading: `Originating UOW ID`

IMS Problem Investigator global field: `OrgUOWID`

ORGVER
Originating IMS Version. IMS Version of the system where the IMS transaction originated.

Source: IMS

Column heading: `Org Vers`

ORIGDS
Original IMS data store. For OTMA workloads in IMS Connect, the name of the IMS data store specified in the IMS destination ID field (IRM_IMSDESTID) of the IMS request message (IRM). *See also* TARGDS.

Source: IMS Connect

Column heading: `Original Datastor`

Orig Tmember
See TMEMBERO

OSAMREAD
OSAM read IO count, approximation only at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: `OSAMRead Count`

OSAMWRIT
OSAM write IO count, approximation only at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: `OSAMWrit Count`

OTHREAD Buffers
See FPBFOTHR

OTMA
OTMA indicator. Indicates whether the transaction originated from OTMA. Reported values are:
OTMA
Transaction originated from OTMA, via an unknown Client
CONNECT
Transaction originated from OTMA, via IMS Connect
MQ Transaction originated from OTMA, via IBM MQ
blank Transaction did not originate from OTMA

Source: IMS

Column heading: `OTMA`

OTMAconf Time
See CONFOTMA

OTMADlay Time
See DLAYOTMA

OTMAproc Time
See PROCOTMA

OUTDEQ
Output messages dequeued count. The number of output messages sent (dequeued) by the transaction. Compare OUTENQ to OUTDEQ to ensure that output messages issued by transactions are being sent to the destination LTERM (dequeued). Outstanding output messages can fill the message queue, causing IMS to fail.

Source: IMS

Column heading: `Out DEQ Count`

OUTENQ
Output messages enqueued count. The number of output messages issued (enqueued) by the transaction. Compare OUTENQ to OUTDEQ to ensure that output messages issued by transactions are being sent to the destination LTERM (dequeued). Outstanding output messages can fill the message queue, causing IMS to fail.

Source: IMS

Column heading: `Out ENQ Count`

OUTPUTG
SMQ global output queue time. The elapsed time from when the output message is put onto the shared message queue by the backend system to when it is read off the queue by the frontend system.

Source: IMS and TRF

Column heading: `SMQ Glob OutQTime`

OUTPUTL
SMQ local output queue time. The elapsed time from when the output message is read from the shared message queue to when it is sent to the output LTERM.

Source: IMS and TRF

Column heading: `SMQ Locl OutQTime`

Output LTERM
See LTERMOUT

Output Msg Len
See MSGLOUT

OUTPUTQ
Output queue time. The elapsed time from when the transaction ends to when the output message is sent back to the LTERM.

Source: IMS and TRF

Column heading: `OutputQ Time`

OUTRTCON
IMS Connect Resume-Tpipe time. Calculated as the elapsed time between the Connect 48 Trigger Event that terminates the Send-Only Connect transaction and the subsequent Connect 42 OTMA Message Received Event after the Resume-Tpipe transaction has commenced.

Source: IMS Connect

Column heading: `Conn RTp Time`

OUTRTIMS
IMS Resume Tpipe output time. The elapsed time from when the transaction output message is sent to the Tpipe (transaction 31 COMMS) to when the Resume Tpipe takes the output message and sends it to its final destination (RTPIPE 31 COMMS).

Source: IMS

Column heading: `IMS RTp Time`

OutTermQ Time
See FPTOTIME

P

P2P Program-switch indicator. Indicates whether the transaction is a program switch. The reported values are:

- **Y** Program switch transaction.
- **N** Not a program switch transaction, but may be the originating transaction in a program switch sequence.
- **-** Unknown. Typically a SL=2 transaction started with a type 31 (DLI GU) record.

Source: IMS

Column heading: `Program-switch indicator`

PARTRAN
Parent transaction code. The transaction code of the parent transaction in the program switch sequence.

Source: IMS

Column heading: `Parent Trancode`

PGMSIZE
MPP preload module size in bytes. If the address space is swapped out during the TRF data collection, this field will be zero. Always zero for BMPs and DBCTL threads.

Source: TRF

Column heading: `Preload Size`

PGMSWIT
Transaction number in program switch sequence. The sequence number of the transaction in the program switch sequence. The originating transaction starts the sequence at position 0. Use ORGTRAN, PGMSWIT (hidden) and TRANCODE as keys for Form-based summary reporting when transit analysis is required. IMS PA will summarize transaction transit activity by grouping all transactions involved in program switching, in the sequence that they are processed.

Source: IMS

Column heading: `Prog Swit#`

PgmSwtch Time
See SWITTIME

PH1+PH2 Time
See FPPH1PH2

PORT IMS Connect TCP/IP Port number.

Source: IMS Connect

Column heading: `Port`

IMS Problem Investigator global field: `Port`

PORTDEP
Port depth. The number of concurrently open sockets on the port from which the transaction was received. This field can be used to monitor the socket usage at the time the individual transactions were received by IMS Connect.

Source: IMS Connect

Column heading: `Port Depth`

PORTTYPE
Port type. Indicates whether a transaction is using a TCP/IP or Local port connection. Reported values are:
T TCP/IP
L Local
blank Not a Connect transaction

Source: IMS Connect

Column heading: `Port Type`

POS Call Count
See FPPOS

POSTOTMA
Total post-OTMA output time. For Sync Level NONE transactions, the elapsed time from when OTMA completed processing the input message to when the transaction terminates (trigger event). For Sync Level CONFIRM transactions, the elapsed time from when OTMA completed processing the ACK response to when the transaction terminates (trigger event).

Source: IMS Connect

Column heading: `PostOTMA Time`

PREOTMA
Total pre-OTMA input time. The elapsed time from when the transaction input message enters IMS Connect (Read Prepare) to when the transaction is sent to IMS (OTMA) for processing.

Source: IMS Connect

Column heading: `PreOTMA Time`

PRIORITY
Transaction priority. As specified in the TRANSACT macro PRTY parameter.

Source: IMS

Column heading: `Pr`

Private <16M
See PRMEM24

Private >16M
See PRMEM31

PRMEM24
Private storage below 16M line. Allocated private storage in bytes below the 16M line. If the address space is swapped out during the TRF data collection, this field will be zero. Always zero for DBCTL threads.

Source: TRF

Column heading: `Private <16M`

PRMEM31
Private storage above 16M line. Allocated private storage in bytes above the 16M line. If the address space is swapped out during the TRF data collection, this field will be zero. Always zero for DBCTL threads.

Source: TRF

Column heading: `Private >16M`

PROCESS
Processing time. The elapsed time the transaction spends processing in the dependent region.

Source: IMS and TRF

Column heading: `Process Time`

Processing UOW ID
See PROUOWID

Process Start
See STARTDEP

Process Type
See FPPRCTYP

Proc IMS ID
See IMSID

PROCOTMA
OTMA processing time. The elapsed time OTMA spent processing the transaction, from when the message is sent to IMS (OTMA) to when the response is received back from OTMA. Transaction messages are sent to OTMA for processing. For Sync Level CONFIRM transactions, the ACK response from the client is also sent to OTMA for processing.

Source: IMS Connect

Column heading: `OTMAproc Time`

PROGRAM
Program or PSB name.

Source: IMS and TRF

Column heading: `Program`

IMS Problem Investigator global field: `Program`

Program exec time
See PROCESS

Prog Swit#
See PGMSWIT

PROUOWID
Processing tracking unit of work (UOW) ID.

Source: IMS

Column heading: `Processing UOW ID`

PSTID
Region PST ID. The PST ID of the dependent region that processed the transaction.

Source: IMS and TRF

Column heading: `PST`

IMS Problem Investigator global field: `Region`

PVT Buff Used
See FPPBFU

PVT Buff Waits
See FPPBFWT

Q

QTYPE
Queue type. Indicates the type of queue from where the transaction was taken to be processed. Reported values are:

MSGQ
IMS message queue

LOCALF
Local-first (always processed by the same system where the message was queued)

LOCAL
IMS shared queue, processed locally by the frontend IMS system

GLOBAL
IMS shared queue, processed globally by another backend IMS system

NONMSG
Non-message driven BMP

CPI-CI
CPI-CI APPC transaction scheduled in message region

Use TRANCODE and QTYPE as keys for Form-based summary reporting when transit analysis of input queue time is required. For shared queues, you will be able to compare input queue times for globally and locally processed transactions.

Source: IMS

Column heading: `Queue Type`

R

RATEMIN
Transaction rate / Minute. For Form-based summary reporting only, the transaction rate per minute.

Source: IMS, Connect, and TRF

Column heading: `Rate/Min`

RATESEC
Transaction rate / Second. For Form-based summary reporting only, the transaction rate per second.

Source: IMS, Connect, and TRF

Column heading: `Rate/Sec`

READEXIT
Read message Exit time. The elapsed time the input message spent being processed by the READ Message Exit. For Sync Level NONE transactions, the READ Message Exit is called once for the input message. For Sync Level CONFIRM transactions, the READ Message Exit is called twice, initially for the input message and a second time for the ACK response from the client.

Source: IMS Connect

Column heading: `ReadExit Time`

ReadSock Ack Time
See ACKREAD

ReadSock In Time
See INREAD

RECOVER
Recoverable transaction indicator. Indicates whether a transaction is recoverable or non-recoverable as defined in the TRANSACT macro INQUIRY parameter. Reported values are:

R Recoverable
N Non-recoverable
blank Not a message queue transaction

Source: IMS

Column heading: `Rec`

REGOCCUP
The elapsed time that an MPP transaction spends in the dependent region, from when it is scheduled, or starts processing, to when the next transaction is eligible for processing.

Source: IMS

Column heading: `Region Occ Time`

RECTOKEN
The last 8 hexadecimal bytes (unique part) of the IMS unit of recovery token.

The recovery token is a 16-byte token that uniquely identifies a unit of work. The token consists of the following items:

IMSID
8-character IMS subsystem ID padded with blanks.

OASN
4-byte origin application sequence number assigned at schedule time. OASN is unique and reset back to zero at cold start.

COMN
4-byte commit number initialized to zeros and incremented each time the application goes through commit processing.

For CICS-DBCTL only, the recovery token is generated by CICS and consists of the 8-character CICS generic APPLID followed by the 8-byte RMUOWID (a STCK value).

To report the full recovery token, use RECTOKID and RECTOKEN together.

Source: IMS and TRF

Column heading: `Recovery Token`

IMS Problem Investigator global field: `RecToken`

RECTOKID
The first 8 characters of the IMS unit of recovery token, identifying the system where the transaction is processed.

The recovery token is a 16-byte token that uniquely identifies a unit of work. The token consists of the following items:

IMSID
8-character IMS subsystem ID padded with blanks.

OASN
4-byte origin application sequence number assigned at schedule time. OASN is unique and reset back to zero at cold start.

COMN
4-byte commit number initialized to zeros and incremented each time the application goes through commit processing.

For CICS-DBCTL only, the recovery token is generated by CICS and consists of the 8-character CICS generic APPLID followed by the 8-byte RMUOWID (a STCK value).

To report the full recovery token, use RECTOKID and RECTOKEN together.

Region
See PSTID

REGTYPE
Region type. The type of region that processed the transaction. Reported values are:

AER IMS Application Execution
BAT Batch Application
BMP Batch message region
CPI CPI-CI APPC in a Message region
DBC DBCTL
IFP Fast Path Message-Driven region
JBP JBP region
JMP JMP region
MPP Message region
MSC MSC transaction sent to a remote IMS system for processing
ODB Open database (ODBM/ODBA)
SWI Message switch or generated output message, not a transaction
TRK Tracking thread
UTI Utility

Source: IMS and TRF

Column heading: `Reg Typ`

REJECT
Transaction rejected indicator. Indicates whether an IMS Connect transaction has been rejected. Reported values are:
R Transaction rejected
blank Transaction not rejected

Source: IMS Connect

Column heading: `Rej`

REROUTNM
Connect Reroute name. The name used on a NAK Reroute request to specify the new destination for the message being NAK'd.

Source: IMS Connect

Column heading: `Reroute Name`

RESPCON
Connect response time. The elapsed time from when the transaction input message enters IMS Connect (Read Prepare) to when the transaction terminates (trigger event).

Source: IMS Connect

Column heading: `CON Resp Time`

RESPIMS
IMS response time. IMS transaction end-user response time. The elapsed time from when the input transaction is enqueued by IMS (01/35) to when the response is sent back to the originating LTERM (31 Communications). Only transactions that respond back to their originating LTERM incur a response time. Responses may occur prior to the completion of program execution time resulting in a response time less than the total transaction time. To analyze all transactions from end-to-end, regardless of their response destination, use field TOTALTM.

Source: IMS and TRF

Column heading: `IMS Resp Time`

RESPMODE
Response mode indicator. Indicates whether a transaction is response mode or not. Reported values are:
R Response mode
N Not response mode
blank Not a message queue transaction

Source: IMS

Column heading: `Resp Mode`

Resp time
See RESPIMS

RESUMETP
Resume Tpipe indicator. Indicates whether IMS Connect uses a resume Tpipe to request asynchronous output data from IMS during a transaction. Reported values are:
R Resume Tpipe is used
N Resume Tpipe is not used
blank Not a Connect transaction

Source: IMS Connect

Column heading: `Resum Tpipe`

IMS Problem Investigator global field: `ResumeTP`

Resume Tpipe Orig Msg Token
See CONNOTOK

Routing Code
See FPRTCODE

RXMLEXIT
XML Adapter message Exit time. The elapsed time the input message from the XML Adapter spent being processed by the READ Message Exit.

Source: IMS Connect

Column heading: `RXMLExit Time`

R0TIME
Internal Application Response time. The sum of the input queue time and processing time.

Source: IMS and TRF

Column heading: `ApplResp Time(R0)`

R1TIME
Total Response time. The sum of the input queue time, processing time, and output queue time.

Source: IMS and TRF

Column heading: `Tot Resp Time(R1)`

S

SAF Call Time
See SAFTIME

SAFTIME
SAF security call time. The accumulated elapsed time spent in all SAF calls for the message.

Source: IMS Connect

Column heading: `SAF Call Time`

SCHEDTM
Schedule time. The elapsed time from when the application program starts (08) to when the input message processing starts (31 DLI).

Source: IMS and TRF

Column heading: `Schedule Time`

SCHEDWIC
Wait time for Intent Conflict, taken from the LINTMINT field of the IMS Application Start (08) record.

SCHEDWPS
Wait time for Pool Space, taken from the LINTMPOL field of the IMS Application Start (08) record.

SCOACKCT
Sync Callout ACK count. The number of Sync callout ACK events attributed to the transaction. *See also* SCOACKTM.

Source: IMS

Column heading: `SyncCout ACK Cnt`

SCOACKTM
Sync Callout ACK time. The elapsed time from when the Sync Callout message is sent to when the ACK is received (YOUT-YACK). If the transaction issued more than one ICAL call, then this field contains the sum of all ACK times. The count of ACK times is available in SCOACKCT.

Source: IMS

Column heading: `SyncCout ACK Time`

SCOCALCT
Sync Callout Response count. The number of ICAL calls issued by the transaction that recorded a response time. *See also* SCOCALTM.

Source: IMS

Column heading: `SyncCout Resp Cnt`

SCOCALTM
Sync Callout Total time. The elapsed time from when the Sync Callout message is sent to when the Response (YOUT-YRSP) or a NAK (YOUT-YNAK) is received back. If the transaction issued more than one ICAL call, then this field contains the sum of all elapsed times. The count of Total Response times is available in SCOCALCT.

Source: IMS

Column heading: `SyncCout RespTime`

SCOEXTCT
Sync Callout External Response count. The total number of Sync Callout external acknowledgements or responses processed by the transaction. *See also* SCOEXTTM.

Source: IMS

Column heading: `SyncCout XRsp Cnt`

SCOEXTTM
Sync Callout External Response time. The elapsed time from when the Sync Callout ACK is received to when either the Response (YOUT-YRSP) or a NAK (YOUT-YNAK) is received. If the transaction issued more than one ICAL call, then this field contains the sum of all elapsed times. The count of External Response times is available in SCOEXTCT.

Source: IMS

Column heading: `SyncCout XRspTime`

SCONAKCT
Sync Callout NAK count. The number of Sync callout ACK events attributed to the transaction. *See also* SCONAKTM.

Source: IMS

Column heading: `SyncCout NAK Cnt`

SCONAKTM
Sync Callout NAK time. The elapsed time from when the Sync Callout message is sent to when the NAK is received (YOUT-YNAK). If the

transaction issued more than one ICAL call, then this field contains the sum of all NAK times. The count of NAK times is available in SCONAKCT.

Source: IMS

Column heading: `SyncCout NAK Time`

SDEP Buf Used
See FPNRDBFU

SEMHQ Input
See FPSEMHQI

SEMHQ Output
See FPSEMHQO

SMQ Glob OutQTime
See OUTPUTG

SMQ Locl OutQTime
See OUTPUTL

SOCKET
Socket number.

Source: IMS Connect

Column heading: `Sock Num`

SRBTIME
Program execution SRB time.

Source: TRF

Column heading: `SRB Time`

STARTCON
Connect transaction start time. The time of day when the transaction input message enters IMS Connect (Read Prepare).

Source: IMS Connect

Column heading: `CON Tran Start`

STARTDEP
IMS transaction processing start. The time of day when the IMS Full Function transaction starts (31). The time of day when the Fast Path transaction starts (5901+InputQ).

Source: IMS

Column heading: `Process Start`

STARTIMS
IMS transaction arrival time. The time of day when the transaction input message is enqueued onto the IMS message queue (01/35).

Source: IMS and TRF

Column heading: `IMS Tran Start`

STARTLVL
IMS transaction start level. Start level is an attribute that IMS PA assigns to every transaction reported in the IMS log. It is an indicator of how far the transaction lifecycle has already progressed at the start of the IMS log. Together with Completion level, Start level is an indicator of the

completeness of information collected about the reported transaction. For example you may choose to report only those transactions that started and ended with the IMS log to guarantee complete performance metrics.

Specify Start level to instruct form-based reporting to report only those transactions with a Start Level less than or equal to the required value. For example: Specify 1 to report start level 1 transactions only; specify 2 to report start level 1 and 2 transactions, and so on. The default is 2.

The IMS transaction start levels are:

1 The transaction first arrives in this IMS log.

For message driven transactions, the type 01 input message is available indicating the transaction has arrived onto the message queue. For non-message driven transactions (BMP, DBCTL, ODBM), the type 08 program start record is available indicating the start of processing. Use start level 1 when analyzing input message arrival rates and lengths.

2 The transaction starts processing in this log.

For message driven transactions only, the type 01 input message is not available, but the type 31 DLI record is available indicating that transaction dependent region processing starts in this IMS log. The complete transit time breakdown is available, including input queue time (which is derived). Use Start level 2 when analyzing transaction dependent region processing time.

3

Dependent region processing is already in progress at the start of this log.

The type 08 application start record is not available for long running BMP or thread processes that commenced processing prior to this log. Processing start time is derived from the first log event for the Job. Processing elapsed time is calculated from this time to the job end (type 07). Use Start level 3 when analyzing all activity that occurred in the IMS log.

Source: IMS

Column heading: `Start Level`

STEPNAME

Region Stepname. The stepname of the dependent region that processed the transaction.

Source: IMS and TRF

Column heading: `Stepname`

SWITTIME

Program switch time.

A program switch occurs when one transaction calls another by inserting a message (destination is SMB) onto the message queue. Program switch time is the elapsed time from when the program switch message is eligible for processing to when it actually starts processing in a dependent message processing region. It is attributed to the program switch transaction not the originating transaction, and is analogous to input queue time for transactions coming into IMS from VTAM or OTMA.

P2P transactions are discrete transactions with their own units of recovery. Their processing eligibility depends on the type of IO PCB used to insert the message:

- For EXPRESS=YES IO PCB, the P2P transaction is immediately eligible for processing (asynchronously).
- Otherwise, the P2P transaction cannot start until the parent starts syncpoint phase 2 and transfers the message to its permanent (SMB) destination.

Source: IMS

Column heading: `PgmSwtch Time`

SYNCELAP
Syncpoint total elapsed time (phases 1 and 2).

SYNCFAIL
Syncpoint Failure Code. Fast Path Syncpoint Failure code from the 5938 log record.

Source: IMS

Column heading: `Sync Fail`

SYNCLEV
Synchronization level. IMS Connect Synch Level. Reported values are:

NONE
No acknowledgement is required from the client

CONFIRM
The client is required to acknowledge

SYNCH
Two-phase commit processing is required

blank Not an IMS Connect transaction

Source: IMS and Connect

Column heading: `Synch Level`

SYNCTIME
IMS transaction syncpoint time. The time of day when the IMS Full Function transaction ends (5612) or the Fast Path transaction ends (5937).

Source: IMS

Column heading: `Syncpoint Time`

SYNCPH1E
Syncpoint phase 1 elapsed time. Note that the required log records are not always available, in which case the time will be reported as not available.

SYNCPH2E
Syncpoint phase 2 elapsed time. Note that the required log records are not always available, in which case the time will be reported as not available.

SYNCPH2F
Syncpoint phase 2 elapsed time for Fast Path only. Note that the required log records are not always available in which case the time will be reported as not available.

T

TARGDS
Target IMS data store. For OTMA workloads in IMS Connect, the name of the IMS data store that processed the request. *See also* ORIGDS.

Source: IMS Connect

Column heading: `Target datastor`

TERMINAL
VTAM Node name. VTAM Node name or BTAM Line/PTERM number. When neither VTAM or BTAM, TERMINAL may be reported as:

- For implicit APPC transactions, network ID (LUP_NETWORK_ID)
- For OTMA transactions, Tpipe name (TMAMCTNM)
- For MSC transactions, origin LTERM (MSGMSINM)

Source: IMS and TRF

Column heading: `Terminal`

IMS Problem Investigator global field: `Terminal`

TIMEOUT
Transaction timeout indicator. Indicates whether an IMS Connect transaction has timed-out. Reported values are:
T Transaction timed-out
blank Transaction did not time out

Source: IMS Connect

Column heading: `Time Out`

TIMERV
Transaction timer value. This value, set by the client in the IRM header, is the time IMS Connect will wait for a response from OTMA before timing out. The time is reported in microseconds. Use the SECGROUP operand to report values in seconds in the range 0 (no wait option) to 4200 (70 mins), or 9999 to wait forever. Use the TIMEOUT field to indicate whether the Connect transaction did time out.

Source: IMS Connect

Column heading: `Transact Timer`

TMEMBERD
Destination OTMA Tmember name. Connect XCF queue which delivers the message to the IMS System.

Source: IMS Connect

Column heading: `Dest Tmember`

TMEMBERO
Originating OTMA Tmember name. IMS XCF queue which will return the message to the Connect System.

Source: IMS

Column heading: `Orig Tmember`

Total IMS Time
See TOTALTM

Total IO Count
See DBIOCALL

Total time
See TOTALTM

TOTALTM
Total transaction elapsed time. The total elapsed time that the transaction incurs in message queues and being processed by IMS. For self-contained transactions, or the initial transaction in a program switch sequence, total time consists of input queue, processing and output queue times. For subsequent transactions in a program switch sequence, total time consists of switch time, processing time and output queue time.

Source: IMS and TRF

Column heading: `Total IMS Time`

Tot Resp Time(R1)
See R1TIME

TOTRTIMS
Resume Tpipe total time. The elapsed time from when the input message arrives (01/35) to when the Resume Tpipe takes the output message and sends it to its final destination (RTPIPE 31 COMMS). This time is useful for transactions that use SENDONLY RESUME-TPIPE protocol – it measures the overall time in IMS that contributes to end-user response time.

Source: IMS

Column heading: `IMS RTp Tot Time`

TPIPE Connect Tpipe name derived from IMS Connect Extensions journal 41 record field CERE_41_TPIPE_NAME.

Source: IMS Connect

Column heading: `Tpipe`

TRANCNT
Transaction count. For Form-based summary reporting only, the number of transactions that were accumulated in this key range.

When TRANCNT is used in combination with fields that report on database activity or external subsystems, additional report lines are produced that provide a count for each database or external subsystem affected by the transaction. If requested, a summary line is also produced that reports on the total number of transactions. As transactions can update more than one database, or more than one external subsystem, the total in the summary line will not necessarily be the sum of counts listed above.

In the following example, the total number of transactions (**A**) does not equal the sum of counts for each database as some transactions have accessed more than one database.

```
         Database       Tran
Trancode DBD Name      Count
IVTNO    -                 4
IVTNO    IVPDB1            7
IVTNO    IVPDB1I           6
IVTNO                     11  A
```

Fields that report on database activity: DATABASE, DBACMETH, DBBLKDEL, DBBLKINS, DBBLKREP, DBBLKUPD, DBORGTYP, DBUPRATE, DEDBAREA, FPDDEPU, FPSDEPI

Fields that report on external subsystems: ESAFNAME, ESAFCALL, ESAFCCON, ESAFCOMT, ESAFPRE

See also ABENDCNT

Source: IMS and IMS Connect

Column heading: `Tran Count`

TRANCODE
IMS Transaction Code.

Source: IMS, Connect, and TRF

Column heading: `Trancode`

IMS Problem Investigator global field: `TranCode`

Transact Timer
See TIMERV

U

UORTIME
Unit-of-recovery time. The elapsed time the transaction spends processing in the dependent region. UOR time is similar to Processing Time, the difference for an MPP transaction is:

- UOR time starts when the IMS unit-of-recovery commences (5607).
- Processing time starts when the MPP transaction gets the input message from the message queue (31 DLI), usually after the commencement of the UOR.

Therefore UOR time is usually longer than Processing time.

Source: IMS

Column heading: `UOR Time`

UOW Lock WAITS
See FPUOWLWT

USERID
User ID. RACF user ID, or substitute as used by IMS for security purposes.

Source: IMS, Connect, and TRF

Column heading: `Userid`

IMS Problem Investigator global field: `Userid`

V

VSAMREAD
VSAM read IO count, approximation at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: `VSAMRead Count`

VSAMWRIT
VSAM write IO count, approximation at completion level 5, accurate at completion level 6. Available from IMS V10. At completion level 5, resource usage metrics are obtained from the type 07 application termination record

and apportioned equally among all transactions that executed under that schedule, regardless of their respective processing times. At completion level 6, resource usage metrics are obtained from the type 56FA transaction accounting record.

Source: IMS

Column heading: `VSAMWrit Count`

VSO Read DASD
See FPVSREAD

VSO Read Dataspce
See FPVSORFD

VSOWrite DASD
See FPVSWRIT

W

WFITIME
WFI elapsed time. SUBQ6 time where the message region waited before the next WFI transaction starts processing. Warning: IMS only records SUBQ6 time to a precision of 0.1 seconds.

Source: IMS

Column heading: `WFI Time`

X

XMITEXIT
Transmit message Exit time. The elapsed time output messages (responses) spent being processed by the XMIT Message Exit.

Source: IMS Connect

Column heading: `XmitExit Time`

XMLADAPT
XML Adapter name. The name of the XML Adapter passed by the SOAP Gateway.

Source: IMS Connect

Column heading: `XML Adapter`

Related reference:

"Sample Report Forms" on page 234
A set of sample Report Forms is provided with IMS PA. They demonstrate how IMS PA reports can be tailored to reflect the many ways you use and configure your IMS systems.

Related information:

"Transaction information provided by Report Forms" on page 224
Form-based reporting is available for IMS, IMS Connect, Combined IMS/IMS Connect, and OMEGAMON TRF reporting.

Part 12. Appendixes

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