IBM FileNet Image Services
Version 4.2

*Installation and Configuration
Procedures for Solaris*

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Contents

ibm.com and related resources

Product support and documentation are available from ibm.com.

Support and assistance

Product support is available on the web. Click Support from the product website
at:

FileNet Image Services Support
> http://www.ibm.com/software/data/content-management/filenet-image-
> services/

PDF publications

You can view the PDF files online using the Adobe Acrobat Reader for your
operating system. If you do not have the Acrobat Reader installed, you can
download it from the Adobe website at http://www.adobe.com.

See the following PDF publications website:

Product	Website
Product Documentation for FileNet Image Services	http://www.ibm.com/support/docview.wss?rs=3283 &uid=swg27010558

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Chapter 1. Getting started

Hardware requirements

Verify that you have satisfied all of the installation hardware requirements for your IBM FileNet Image Services installation.

Use the *IBM Capacity Planning Tool* to estimate your system requirements. This tool helped you design your FileNet Image Services system, and now you can use the tool to verify that your system meets your requirements.

Server memory

Familiarize yourself with the minimum memory requirements for running an IBM FileNet Image Services system. Your servers must have at least the amount of memory shown here.

Root/Index and Application Servers with DB2

- 512 MB memory for each processor in the server.

Root/Index and Application Servers with Oracle

- Oracle 10g - 1024 MB memory for each processor in the server.
- Oracle 11g - 1024 MB memory for each processor in the server.

Storage Library and Application Servers without RDBMS

- 512 MB memory for each processor in the server.

To determine the total amount of installed memory, enter the following command on your server.
- To determine RAM:

  ```
  prtconf | grep Memory
  ```
- To determine Free Disk Space in KB:

  ```
  df -k
  ```

Total paging space

The amount of server memory determines the amount of paging space that you need for Oracle and DB2 relational databases.

For DB2, the amount of paging space should be twice the size of physical memory.

For Oracle, the amount of paging space varies as shown in the following table.

Table 1. Required Total Paging Space for Oracle

RAM	Swap Space
Up to 1024 MB	Two times the size of RAM
Between 1025 MB and 2048 MB	1.5 times the size of RAM
Between 2049 MB and 8192 MB	Equal to the size of RAM
More than 8192 MB	0.75 times the size the RAM

Total disk space

The amount of disk space required for RDBMS software depends on whether Server or Client software is installed and the products selected.

For more information, see the following guidelines:

- *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software*
- *IBM FileNet Image Services Guidelines for Installing and Updating Site-Controlled Oracle Software on UNIX Servers*

To download these guidelines from the IBM support page, see "ibm.com and related resources" on page v.

Temporary space

The installation program needs a certain amount of temporary space for extracting files.

- 500 MB total space in /var/tmp

Tip: If your server does not have enough temporary space, you can direct the installation program to use another directory that does have enough space.

File system space for FileNet Image Services

Each file system requires a minimum amount of available file system space for IBM FileNet Image Services.

FileNet Image Services requires the following minimum amount of free disk space:

- 1000 MB (1 GB) total space in /fnsw
- 500 MB total space in /fnsw/local

Important: If /fnsw/local is not a separate file system, the installation requires 1500 MB (1.5 GB) total space in /fnsw.

In addition, the installation program needs the following amount of temporary space for extracting files:

- 500 MB total space in /var/tmp

Multicultural support

If you are configuring your IBM FileNet Image Services system in a non-English environment, there are several character set and configuration issues of which you must be aware.

See Appendix D, "Installing FileNet Image Services in non-English Environments," on page 111.

Multicultural Keyboard

If you are using a multicultural keyboard, select the keyboard language when you first logon to CDE (Common Desktop Environment). At the logon screen, select **Options** > **Language**. Then choose the appropriate keyboard language from the menu.

Additional requirements for Solaris

Determine the hardware requirements for the Solaris systems.

Solaris hardware server requirements

Your Solaris servers must have the necessary hardware and software to successfully run IBM FileNet Image Services software.

Sun Microsystems SPARC- or UltraSPARC server (32-bit or 64-bit processors).

Restriction: Oracle 10g and 11g are compatible with only 64-bit servers. DB2 databases must be located on remote Solaris servers.

Solaris operating system software

Your Sun servers must have a supported Solaris operating system software version to successfully run IBM FileNet Image Services software.

FileNet Image Services is compatible with the following Solaris operating system versions:
- Solaris version 9 (32-bit or 64-bit) operating system
- Solaris version 10 (64-bit) operating system

For the DB2 graphical tools, see *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software*.

To download these guidelines from the IBM support page, see "ibm.com and related resources" on page v.

Locate the patch requirements for your system on the IBM Information Management support page athttp://www.ibm.com/software/data/content-management/filenet-image-services/.

Software requirements

Verify that you have met all of the installation software requirements for your IBM FileNet Image Services installation.

Server naming conventions

Naming IBM FileNet Image Services servers is an important step when you install your FileNet Image Services system. Server names can have a maximum of 20 characters and must only contain ASCII alphanumeric characters.

Every system resource is identified by a three-part name stored in the Network Clearing House (NCH) database. Do not use nonalphanumeric characters or hyphens. The three parts of the resource name identify an object, a domain (system name), and an organization, in this format:

`object:domain:organization`

The maximum length of a three-part name is 82 characters: 40 for the object, 20 for the domain, 20 for the organization, and two for the colons separating the parts.

Important: When you specify an object from a PC workstation, the maximum length of a three-part name is 79 characters—39 for the object, 19 for the domain, 19 for the organization, and two for the colons. Be aware that when NCH (Network Clearing House) crosses a router to find a server, it could convert the

domain name to an IP host name using specific criteria, one of which is dropping the underscore character and all nonalphanumeric characters.

Object name

An object is a resource like a tape, printer, database, software service, logon name, and such. Some object names are created by NCH_tool, while other objects have names predefined by the system.

DefaultIMS is an example of a predefined object name. DefaultIMS is used to access the index database.

Domain name

The domain (or system) name is set up at IBM FileNet Image Services system configuration time by using the **fn_setup** tool.

In a multiserver system, each server has a different server name, so the domain name is usually the server name of the Root/Index server.

Organization name

The third part of the NCH resource name is the organization name, which can be your company or department name, such as ExampleCo.

The organization name is case sensitive and must not exceed 20 characters. Your organization name can be registered with the American National Standards Institute (ANSI) for a fee. For more information, go to http://www.ansi.org and search for "organization name." ANSI requires that the name be alphanumeric: letters and numbers only. Registering your organization name ensures that it will be unique in the LDAP naming hierarchy.

FileNet Image Services software image

Download the IBM FileNet Image Services and COLD software to your system.

FileNet Image Services & COLD™ 4.2 for Solaris

Relational database management software

There are several versions of relational database management system (RDBMS) software supported with IBM FileNet Image Services. Your Database Administrator is responsible for installing the appropriate version of RDBMS software.

DB2 RDBMS software (client)

Your server must have a supported version of the DB2 RDBMS software to run IBM FileNet Image Services software.

Attention: The DB2 RDBMS software is not supplied with FileNet Image Services.

See the *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software* for more information. To download these guidelines from the IBM support page, see "ibm.com and related resources" on page v.

Oracle RDBMS software

Your server must have a supported version of the Oracle RDBMS software to run IBM FileNet Image Services software.

Attention: The Oracle software is not supplied with FileNet Image Services.

See the *IBM FileNet Image Services Guidelines for Installing and Updating Site-Controlled Oracle Software on UNIX Servers* for more information.

To download these documents, see "ibm.com and related resources" on page v

Debugging software

Debugging software enables support personnel to troubleshoot both IBM FileNet Image Services and operating system problems. If debugging software is installed on your FileNet Image Services, it must be installed on each server.

Debugger - Solaris

A command-line debugger is included with SunStudio, Compiler Collection, which includes C, C++ and Fortran compilers for the creation of high-performance, high-quality applications for the Solaris SPARC system.

To determine if the debugger is already installed, enter the following command on each server: `pkginfo | grep SPROdbgr`

If this file is present, the debugger is installed. If this file is not present, and if the media and license are available, install it. Otherwise, contact your Sun representative for complete ordering information.

Multicultural support

When you install the operating system, select the character set you plan to use with IBM FileNet Image Services and your relational database software, such as DB2 or Oracle. Likewise, when you install the relational database software, select the same character set as you did for the operating system.

Important: You must select the same character set for each software product that you install so that the character sets do not conflict.

When you install the FileNet Image Services software, select the appropriate character set on both the **System Attributes** tab in the **System Configuration Editor** and on the **Relational Databases/DB2** tab or the **Relational Databases/Oracle** tab. Later, when you create indexes, document classes, and media families, you will be able to use the appropriate alphanumeric characters for your locale.

- Folders are created and named using Desktop client software. Because the folders are stored in the index database, their names must also use the Windows code page character set that is the equivalent of the character set used by the RDBMS and the FileNet Image Services software on the FileNet Image Services server.
- For FileNet Image Services systems configured with Western European character sets, valid alphanumeric characters must be in the 7-bit ASCII range. For FileNet Image Services systems configured with non-Western European character sets, any valid 8-bit alphanumeric character is acceptable.
- Both Western and non-Western 8-bit character sets (character values range from 0 to 255) have valid alphanumeric characters above the ASCII range. ASCII characters occupy the first half of all 8-bit character sets and range in value from 0 to 127. Non-ASCII characters have values ranging from 128 to 255.

See Appendix D, "Installing FileNet Image Services in non-English Environments," on page 111 for more information.

Heterogeneous support

It is important to be aware of the considerations when IBM FileNet Image Services uses different operating systems.

FileNet Image Services systems can be composed of servers that use a combination of different operating systems. However, the following limitations apply:

- A FileNet Image Services Root/Index server and Storage Library server must use the same operating system platform.
- An Application server that uses the Windows operating system can be configured with any UNIX or Windows FileNet Image Services system.
- A remote relational database server can use an operating system that is different from the FileNet Image Services Root/Index server and Storage Library server.
  - DB2 relational databases must always be installed on remote AIX or Solaris servers.
  - Oracle relational databases can be installed on either local or remote UNIX or Windows servers.
  - Oracle relational databases can also be installed on remote Linux servers.

For example, within these limitations, the main FileNet Image Services system can be composed of UNIX servers, while a remote relational database server can be either a UNIX or a Windows server. Conversely, the main FileNet Image Services system can be composed of Windows servers, and a remote relational database server can be either a UNIX or a Windows server.

Related documentation

Other documents that contain information related to the installation of IBM FileNet Image Services are available on the IBM support site.

To view these documents, see "ibm.com and related resources" on page v.
- *IBM FileNet Image Services System Administrator's Handbook*
- *IBM FileNet Image Services System Administrator's Companion for UNIX*
- *IBM FileNet Image Services Enterprise Backup and Restore User's Guide*
- *IBM FileNet Image Services Third-Party Backup/Restore Guidelines*
- *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software*
- *IBM FileNet Image Services Guidelines for Installing and Updating Site-Controlled Oracle Software on UNIX Servers*
- *IBM FileNet Image Services MSAR Procedures and Guidelines*
- *IBM FileNet Image Services Integral Single Document Storage and Retrieval Procedures and Guidelines*

Important: For primary information about DB2 or Oracle products, see the documentation that came with your relational database software.

Chapter 2. System Administrator tasks - Solaris

Gather pertinent information and configure the operating system to optimize the system for the IBM FileNet Image Services software. If you plan to install the MKF databases in raw partitions, install and configure the volume management software.

In this chapter you will gather pertinent information, configure the operating system to optimize the system for the IBM FileNet Image Services software. In addition, you will install and configure the volume management software.

The following list summarizes the tasks that the System Administrator must complete.

1. Check server memory
2. Check Solaris version
3. Verify Solaris zones support
4. Check kernel limits
5. Verify the character set
6. Update the /etc/hosts file
7. Create FileNet Image Services users and groups
8. Install volume management software (optional)
9. Create logical volumes for Image Services
10. Set up links for Image Services

Peer server names and addresses (for multi-system committal or cross-system commital):

_____

_____

Operating system requirements

Check the version of the Solaris operating system by performing the steps in this section on all servers.

Log on as a user with root privileges to check and gather the information in this section.

Check server memory

Verify that your servers have the minimum amount of RAM and free disk space.

Procedure

To check server memory:

1. Use the following commands to check your system requirements:

Table 2. Commands to check system requirements

System Item	Command
RAM	prtconf | grep Memory

Table 2. Commands to check system requirements (continued)

System Item	Command
Free Disk Space in KB	df -k

- 1024 MB or more memory for each processor on Root/Index servers or Application servers with Oracle 10g or Oracle 11g.
- 500 MB or more memory for each processor on Root/Index servers or Application servers with DB2.
- 500 MB or more memory for each processor on Storage Library servers or Application servers without RDBMS.

2. Enter the server memory information in the "Solaris Installation Worksheet" on page 23.

Verify Solaris Debugger

Debugging software enables support personnel to troubleshoot both IBM FileNet Image Services and operating system problems. If debugging software is installed on your FileNet Image Services, it must be installed on each server.

For more information, see "Debugger - Solaris" on page 5.

Check Solaris Operating System Version

Verify your system is running a supported version of the Solaris operating system. Your server must already be running Solaris version 9 (32–bit or 64–bit) or 10 Operating System (64–bit only).

After installing the Solaris operating system, locate the *Hardware and Software Requirements for IBM Image Services, IBM Image Service Resource Adapter, and IBM FileNet Print*. To download this document, see "ibm.com and related resources" on page v. Select your operating system from the list and review the patch requirements. Verify that you have the latest release level. For example:

- Solaris 9 09/06 Release
- Solaris 10 05/08 Release

Verify Solaris zones support

Verify your IBM FileNet Image Services system is running Solaris version 10 and is ready to support Solaris zones.

IS 4.1.2 supports Solaris Zones with Solaris version 10.

- Global Zone
- Local Zones
- Create MKF dataset from Global Zone and then export to Local Zone. See "Set up Solaris zones" on page 20.

Verify or change operating system kernel limits

To address IBM FileNet Image Services and RDBMS system resource issues, verify all and, if necessary change some of the operating system kernel limit settings.

About this task

Both the FileNet and the RDBMS system software are very resource intensive. To satisfy the resource needs of the software, you may need to increase some default operating system parameters.

Regardless of which version of Solaris you are running, complete the following steps:

Procedure

1. Edit the /etc/logindevperm file, using your preferred editor (such as, vi): `vi /etc/logindevperm`
2. Append the following line to the end of the file: `/dev/console 0666 /dev/console`

   Note: Note This line changes the login-based permissions of the console, and will prevent console warning messages from being logged in the error log file.
3. Exit the file and save your changes.

What to do next

If you are using Solaris 9, continue with the next section. If you are using Solaris 10, skip to ""Checking Solaris 10 kernel limits" on page 10.

Checking Solaris 9 kernel limits

Add Solaris 9 kernel parameter values to the `/etc/system` file.

Procedure

To check Solaris 9 kernel limits:

1. Make a copy of the system file (with a new name). Log on the server as a user with root privileges, and enter a command similar to the following: `cp /etc/system /etc/system.save`
2. Edit the /etc/system file, using your preferred editor (for example, vi): `vi /etc/system`
3. Enter the parameters listed below (if necessary), and be sure that they are set to at least the values shown. (If your values are higher, enter the actual values needed for your system.)

   Attention: Use extreme care when entering the commands shown below. Entering some of the settings incorrectly may cause general system errors. Before restarting the server, verify the accuracy of each of the lines added to the /etc/system file.

   Solaris 9 Kernel parameters in /etc/system

```
set rlim_fd_cur=256
set noexec_user_stack=1
set msgsys:msginfo_msgtql=65536
set max_nprocs=400
set fnsod:sod_Debug=0
set rlim_fd_max=1024
set semsys:seminfo_semaem=16384
set shmsys:shminfo_shmmax=4294967295
set shmsys:shminfo_shmmni=2000
set msgsys:msginfo_msgmni=2048
set semsys:seminfo_semmsl=512
set semsys:seminfo_semopm=256
set semsys:seminfo_semume=500
```

```
set semsys:seminfo_semvmx=32767
set semsys:seminfo_semmap=50
set semsys:seminfo_semmni=2000
set semsys:seminfo_semmns=2000
set semsys:seminfo_semmnu=500
```

DB2 also requires these settings:

```
set msgsys:msginfo_msgmax=65535
set msgsys:msginfo_msgmnb=65536
```

What to do next

Continue with the task "Verify character set and time settings" on page 12.

Checking Solaris 10 kernel limits

Use the Resource Control Facility feature to adjust Solaris 10 kernel parameter
values.

About this task

Solaris 10 provides the Resource Control Facility feature for setting kernel
parameters. See the Solaris 10 documentation on the Oracle website for information
about this feature. The values of the parameters in the project file override the
values of the parameters in the /etc/system file. Make sure that the values of the
parameters in the project file are the same as or greater than the values of the
parameters in the /etc/system file.

Important: You can make kernel parameter changes for IBM FileNet Image
Services to the Solaris Resource Control Facility whether or not you are using
zones in Solaris 10. In Solaris 10, you can define a Solaris 10 project and attach
resources to the project. For more information, see the Solaris documentation.

Procedure

To set Solaris 10 kernel limits:

1. Log on as the FileNet Image Services user to get the resource controls for that
   user. A project is dependent upon a user or a group to get the resource
   controls for that user.
2. Enter the following process control command at the shell prompt to see the
   resource controls associated with active process, tasks, and projects:

   `prctl $$`
3. Verify that the values are set as indicated in the **Solaris 10 for FileNet Image
   Services** column of the following table. These kernel parameter values are the
   preferred values for FileNet Image Services with Solaris 10. If you have not
   specified kernel parameters in the /etc/project file, the system uses the
   default values, which are adequate in most cases.

   Important: All IPC kernel parameters in the /etc/system file are obsolete, but
   it is all right to have obsolete parameters in the /etc/system file on a Solaris
   10 system. These parameters are used to initialize the default resource control
   values as in previous Solaris releases. See the *Solaris Tunable Parameters
   Reference Manual* on the Oracle website for details.

Table 3. Solaris 10 tunable parameters

Parameter Name	Solaris 10 Default	Solaris 10 for FileNet Image Services
max-sem-nsems	512	512
max-sem-ops	512	512
max-sem-ids	128	2048
max-shm-ids	128	2048
max-msg-ids	128	2048
max-shm-memory	1/4 Physical memory	4 GB
max_nprocs	10 + (16 x maxusers) (2048 or server physical memory (in MB), whichever is less)	default
Rlim_fd_max	65536	65536
Rlim_fd_cur	256	256
Noexec_user_stack	0	1
process.max-msg-qbytes	65536	65536
process.max-msg-messages (msgtql)	8192	65536

4. Log on the server as a user with root privileges.

5. Make a copy of the project and rename the system file.

   ```
   cp /etc/project /etc/project.save
   mv /etc/system /etc/system.save
   ```

6. View the current settings for the FileNet Image Services user and the Oracle user, and then return to root user.

Option	Description
For the FileNet Image Services user, enter:	su - fnsw projects -l
For the Oracle user, enter:	su - oracle projects -l

7. If a project does not exist for the FileNet Image Services user, such as fnsw, enter a command similar to the following to create the necessary parameter:

   ```
   projadd -U fnsw -K "project.max-shm-memory=(priv,4GB,deny)" user.fnsw
   ```

8. If a project does exist for the FileNet Image Services user, such as fnsw, enter a command similar to the following to modify it:

   ```
   projmod -sK "project.max-shm-memory=(priv,4GB,deny)" user.fnsw
   ```

   Update the four other kernel parameters required for the FileNet Image Services user in etc/project. Their values must match the values in the **Solaris 10 for FileNet Image Services** column of the table. As an example:

   ```
   projmod -sK "project.max-shm-ids=(priv,2048,deny)" user.fnsw
   projmod -sK "project.max-msg-ids=(priv,2048,deny)" user.fnsw
   projmod -sK "project.max-sem-ids=(priv,2048,deny)" user.fnsw
   projmod -sK "process.max-msg-messages=(priv,65536,deny)" user.fnsw
   ```

   Tip: These five parameters are the only ones that you must set for the FileNet Image Services user. The default values of the other parameters are acceptable.

You might optionally choose to increase the process.max-msg-qbytes parameter to support multitasking. If you specify this parameter, the value must be larger than the default value of 65536.

9. If a project does not exist for the RDBMS software user, such as oracle, enter a command similar to the following to create one:

   ```
   projadd -U oracle -K "project.max-shm-memory=(priv,4GB,deny)" user.oracle
   ```

10. If a project does exist for the RDBMS user, such as oracle, enter a command similar to the following to modify it:

    ```
    projmod  -sK "project.max-shm-memory=(priv,4GB,deny)" user.oracle
    ```

    Tip: The max-shm-memory parameter is the only one that you must set for the RDBMS user. The default values of the other parameters are acceptable.

11. Create a new /etc/system file:

    ```
    vi  /etc/system
    ```

12. Add the following value to the file:

    ```
    set noexec_user_stack=1
    ```

    Tip: This parameter is the only one that is required in the /etc/system file.

13. View the /etc/system.save file that you created earlier, and transfer any additional values that are required by your existing applications to the /etc/system file.

14. Exit the file and save your changes.

15. Verify the new active kernel values for both FileNet Image Services and Oracle users match the projects -l output you saw in .

Option	Description
For the FileNet Image Services user, enter:	su - fnsw prctl $$
For the Oracle user, enter:	su - oracle prctl $$

16. Verify the contents of the /etc/system file by entering:

    ```
    more /etc/system
    ```

Verify character set and time settings

Verify and configure the Solaris character set and time settings by looking at the current time format setting and the LC_TIME setting.

About this task

The National Language Translation (NLT) library does not support the UNIX substitution string "%r" mask. When the mask is set to "%r", Image Services defaults to a good mask. However, when the FileNet Image Services software posts messages to the log file, NLT errors are reported for each new message.

The default time mask varies on UNIX depending on the LANG and LC_TIME environment settings.

Procedure

To verify character set and time settings

1. Verify the current time format setting by entering: `locale -k t_fmt` The result might appear similar to this: `t_fmt="%r"`

   This example illustrates an incorrect mask. To change the default mask to one that can be used with the NLT library, reset the LC_TIME environment setting.

2. The LC_TIME setting must be configured for the entire system, so change the /etc/profile file (or each user's .profile file) to include the following lines:

   ```
   LC_TIME=C
   export LC_TIME
   ```

3. After you make this change, verify that the environment is correct for each user by logging in and running the locale command again:

   • To check the time format, enter: `locale -k t_fmt`

     The result is: `t_fmt="%H:%M:%S"`

     Note: The new value shown for t_fmt. This is the correct output.

   • To check the character set settings, enter: `locale`

     The result looks like this:

     ```
     LANG=
     LC_CTYPE="C"
     LC_NUMERIC="C"
     LC_TIME=C
     LC_COLLATE="C"
     LC_MONETARY="C"
     LC_MESSAGES="C"
     LC_MESSAGES="C"
     LC_ALL=
     ```

     Note: "C", the system default, is being used. This is also the correct output. Be sure the character set specified on your server is appropriate for your locale.

System configuration issues

This section contains procedures that must be followed to ensure that your system in properly configured before installing FileNet Image Services and RDBMS software.

Start Solaris X Windows

If X Windows or Common Desktop Environment (CDE) is not already running, start the Solaris X Windows environment.

About this task

Perform the steps in this section on all servers.

Note: If X Windows or CDE is not already running, start the Solaris X Windows environment. If X Windows or CDE is already running, you can skip this section.

Procedure

Log on to the server as a user with root privileges, and start the Solaris X Windows environment by entering:`/usr/openwin/bin/Xsun`.
X Windows starts immediately.

Tip: When necessary, you can use the built-in text editor provided with the Solaris 10 Operating System until you install the IBM FileNet Image Services software.

After the IBM FileNet Image Services software is installed, do not attempt to start X Windows using the command shown above.

Update /etc/hosts file

Update the /etc/hosts file on all servers in your IBM FileNet Image Services system to allow the different servers to communicate with each other.

Before you begin

Important: Your hosts file might contain a combination of the familiar IPv4 network addresses and the more recent IPv6 network addresses. The IPv6 addresses contain up to eight groups of hexadecimal numbers separated by colons (for example, 2001:DB8:2C0::FE35::9FFF:D28).

If this server uses DNS (Domain Name Service) or NIS (Network Information Service), skip the remainder of this section. Contact the network administrator for further information. Skip to the 'Verify Volume Management Software' topic in the System Configuration Issues section, "Prepare Solaris systems" on page 88.

You must include the names and IP address of each workstation/server with which you want to communicate. Without a description of other workstations/servers included in the /etc/hosts file, your host will not communicate with other systems. In addition, verify that the name and address of your host is included in the /etc/hosts file on your system.

About this task

Perform the steps in this section on all servers. The /etc/hosts file must contain the four-part NCH service name of the local server. If an entry for your local server does not exist, you can add one now.

The general format of a hosts file entry is:

```
IP_address_of_IS_Domain IS_server   NCH_four_part_service_name
```

For example:
```
IS Root/Index server IP address: 192.0.2.13
IS Root/Index server name:  titian
IS Domain name: Titian:ExampleCo
```

The hosts file entry looks like this:

```
192.0.2.13          titian          titian-exampleco-nch-server
```

If your FileNet Image Services system will be communicating with other FileNet Image Services domains, your /etc/hosts file might resemble the following example:

```
192.0.2.4                          localhost
::1                                localhost
192.0.2.13                         titian      titian-exampleco-nch-server
192.0.2.18                         bassanio    bassanio-exampleco-nch-server
192.0.2.21                         atelier     atelier-exampleco-nch-server
2001:DB8:FE80::2C0:FE35:9FFF:D28   atelier     atelier-exampleco-nch-server
192.0.2.2                          sienna      sienna-exampleco-nch-server
192.0.2.3                          vermeer     vermeer-exampleco-nch-server
2001:DB8:2638::927::2638           vermeer     vermeer-exampleco-nch-server
2001:DB8::fe80::fefe:0927:2638     vermeer     vermeer-exampleco-nch-server
```

Procedure

To update /etc/hosts file:

1. Log on as a user with root privileges.
2. Use your preferred editor (for example, vi), to edit the /etc/hosts file: vi /etc/hosts
3. Verify that the word "localhost" displays on a line along with an IP address. If "localhost" does not appear on a line as shown in the example below, the FileNet Image Services software will not work.
4. Verify that there is a line containing the names and IP address of your server.

   If there is no current entry for your server name, you add your server/host name and IP address to the file.

   Note: The screen shown is an example screen. Enter the appropriate information for your system.

```
# @(#)hosts       Revision: 2.1   2011/02/18 21:02:29
#ident   "@(#)cmd-inet:etc/hosts 1.1"
#
# Internet host table
127.0.0.0 loopback
127.0.0.1 localhost
192.0.2.15 your server name
192.0.2.17 athena
192.0.2.19 medea
192.0.2.20 theseus
192.0.2.22 perseus
```

   You can configure a total of 16 peer systems.

   Note: While the /etc/hosts file is open, add the server/host name and IP address of any other server that you will need to communicate with. The example above shows only IPv4 addresses. When adding addresses for peer systems in fn_edit, use the IPv4 format rather than the IPv6 format.

Create FileNet Image Services users and groups

Users and groups on Solaris 9
Use the admintool on applicable servers to create Solaris 9 groups and users for IBM FileNet Image Services system administration.

About this task

Perform the steps in this section on these servers for the FileNet groups and users: Root/Index and Storage Library server during a Dual server installation.Root/Index/Storage Library server during a Combined server or Entry server installation.

Note: On servers with Oracle software, add the FileNet software user such as fnsw to the `dba group` that administers the database.

In this section, you will use the admintool to create groups and users (with the appropriate IDs) for FileNet administration. (There will be a directory in the root file system called home. Solaris uses this directory for the home directory of the user. (To use this, you will have to make a file system for it.) See the Solaris documentation for more information.

Procedure

To create users and groups on Solaris 9:

1. Verify that you are logged on as a user with root privileges and that you are running X Windows.
2. Open a window and start the admintool by entering: `admintool &`
3. From the Admintool:Users window, select **Browse and Groups**.
4. Select **Edit** and **Add**.
5. Enter the Group name for the group you are creating. A group ID will be assigned automatically. Click **OK** to accept the new group. Repeat Steps 3 and 4 to create the following groups:

Table 4. IS Groups and Members

Group Name	Required Members	Group Description
fnusr	<fnsw>, root, <dba user>	Members can operate any FileNet software (including COLD). All operators and administrators must belong to this group.
<dba group>	<dba user>, <fnsw>	The Database Administration group <dba group> and <dba user> are created by the Database Administrator. The FileNet user, fnsw, must be a member of the <dba group>.
fnadmin	<fnsw>, root	Members can perform administrative functions. Administrators must belong to this group to change configuration, perform diagnostics, or restore backups.
fnop	<fnsw>	Members can start and stop all FileNet software (including COLD). Administrators must also belong to this group.

From the Admintool window, select the Browse option, then select Users.

6. Select **Edit** and then select **Add**.
7. Enter the User name, primary and secondary group, and login shell for each user.
8. Set the password for the user. (Select the Normal password option.)

9. Create the home directories for the appropriate users. (For example, the fnsw home directory could be /home/fnsw.)

10. Click **OK** to accept the new user. Repeat steps 6 through 10 to create the FileNet software user, such as fnsw:

Table 5. IS user names

User Name	Group Assignment
fnsw (for example)	Primary Group: fnusr Secondary Group: fnadmin, fnop

Verify that all necessary users and groups exist and are configured correctly.

Note: To use the FileNet Image Services tools and software when logged on as a specific user, you must add the user to either the fnop or fnadmin groups. Users in the fnop group can start and stop FileNet Image Services software only, while users in the fnadmin can read, write and execute FileNet Image Services software. Additionally, if you add other users to fnop or fnadmin, you must also add them to the fnusr group.

Users and groups on Solaris 10

Use the Solaris Management Console (SMC) on applicable servers to create Solaris 10 groups and users for IBM FileNet Image Services system administration.

Before you begin

In this section, you will use the Solaris Management Console (SMC) to create groups and users (with the appropriate IDs) for FileNet administration. See Solaris documentation for more information.

Note: If you are setting up a system using Solaris Zones, this section needs to be completed on all servers in the Global Zone.

Procedure

To create users and groups on Solaris 10:

1. Verify that you are logged on as a user with root privileges.

2. Open a window and start the **Software Management Console** tool by entering:
   `smc &`

3. From the main SMC window, expand **This Computer**, then expand **System Configuration**.

4. Create the users and groups from the following table.

Table 6. User and groups for Solaris 10

Group Name	Required Members	Group Description
fnusr	<fnsw>, root, <dba user>	Members can operate any FileNet software (including COLD). All operators and administrators must belong to this group.

Table 6. User and groups for Solaris 10 (continued)

Group Name	Required Members	Group Description
<dba group>	<dba user>, <fnsw>	The Database Administration group <dba group> and user <dba user> are created by the Database Administrator. The FileNet user, fnsw, must be a member of the <dba group>.
fnadmin	<fnsw>, root	Members can perform administrative functions. Administrators must belong to this group to change configuration, perform diagnostics, or restore backups.
fnop	<fnsw>	Members can start and stop all FileNet software (including COLD). Administrators must also belong to this group.

5. Create the home directories for the appropriate users. (For example, the fnsw home directory could be /home/fnsw.)

6. Click **OK** to accept the new user. Repeat steps to create the FileNet software user, such as fnsw:

Table 7. IS users - Sol 10

User Name	Group Assignment
fnsw (for example)	Primary Group: fnusr Secondary Group: fnadmin, fnop, <dba group>

Verify that all necessary users and groups exist and are configured correctly.

Note: To use the FileNet tools and software when logged on as a specific user, you must add the user to either the fnop or fnadmin groups. Users in the fnop group can start and stop FileNet software only, while users in the fnadmin can read, write and execute FileNet software. Additionally, if you add other users to fnop or fnadmin, you must also add them to the fnusr group.

Set up password for FileNet software user
Set up password for a FileNet software user

Before you begin

If you have not previously established a password for fnsw, create the password now before proceeding with the IBM FileNet Image Services software installation. Skip the steps in this procedure if you set the user passwords while creating users in "Users and groups on Solaris 9" on page 15.

Procedure

To set up the FileNet software user (fnsw) password:

1. At the system prompt enter:`passwd fnsw`. You are prompted for a New password.

2. Enter the password, you are then prompted to Re-enter new password:.
3. Enter the password a second time, you are returned to the system prompt.

Verify volume management software

Verify your IBM FileNet Image Services system can support and has installed either VERITAS Volume Manager, Solaris Volume Manager, or ZFS software on each server.

Before you can modify or create file systems and volumes for the IBM FileNet Image Services software, the System Administrator must verify that VERITAS Volume Manager, Solaris Volume manager, or ZFS software is installed on each server.

The system must meet the requirements specified in the volume manager documentation.

Create logical volumes for Image Services data sets

Create the Solaris file systems and volumes by using either the virtual administrator or the storage administrator. You can create the MKF data sets (permanent, transient, security) as either file systems or raw partitions. File systems are preferred.

The sizes shown in the following table are minimum sizes. See the table in this section for the appropriate sizes for this FileNet Image Services system.

Important: For sites with disk arrays ONLY: Disk arrays managed by the Veritas volume management software, do not always expand to an even MB boundary. You must verify the new size, after expanding a volume, by listing the volume information. The new volume size is shown in kilobytes if it did not "grow" to an even Megabyte boundary. Previous installations with a disk array (configured for RAID-5) have determined that the correct procedure for accurately "growing" a volume to an even MB boundary is to make the new volume size evenly divisible by seven. It is uncertain if the suggestion is applicable for all disk arrays. (Check the most current version of the Release Notes for more information.)

Table 8. Minimum sizes for Solaris file systems and volumes

Volume Name	Mount point	Minimum Size	Actual Size You Create	User	Group	Mode
fnsw	/fnsw	500m		fnsw	fnusr	770
local	/fnsw/local	500m		fnsw	fnusr	770
vartmp	/var/tmp	500m		fnsw	fnusr	770
fn_cache0	/fnsw/dev/1	100m		fnsw	fnusr	664
fn_permanent_db0	/fnsw/dev/1	100m		fnsw	fnusr	664
fn_permanent_rl0	/fnsw/dev/1	64m		fnsw	fnusr	664
fn_transient_db0	/fnsw/dev/1	320m		fnsw	fnusr	664
fn_transient_rl0	/fnsw/dev/1	256m		fnsw	fnusr	664
fn_sec_db0	/fnsw/dev/1	64m		fnsw	fnusr	664
fn_sec_rl0	/fnsw/dev/1	64m		fnsw	fnusr	664

> Tip: For the **Actual Size You Create** column, each volume is determined by the *IBM Capacity Planning Tool*.

Set up Solaris zones

If you are setting up a system using Solaris Zones, you must first create the MKF data sets in a Global Zone using VERITAS Volume Manager, Solaris Volume Manager, or ZFS.

Before you begin

Verify that you have created users and groups on your Global Zones systems as described in "Users and groups on Solaris 10" on page 17

About this task

Note: Optical libraries are not supported in a Solaris Zones environment.

Procedure

To set up Solaris zones:

1. Create the MKF datasets in a Global Zone using VERITAS Volume Manager, Solaris Volume Manager, or ZFS. In our example, we will use ZFS, where fnzfs is a name of a zpool. it can be named anything. Commands similar to the following need to be executed to create the data sets:

```
zfs create -V 100m fnzfs/zone1/fn_cache0
zfs create -V 100m fnzfs/zone1/fn_permanent_db0
zfs create -V 64m fnzfs/zone1/fn_permanent_rl0
zfs create -V 320m fnzfs/zone1/fn_transient_db0
zfs create -V 256m fnzfs/zone1/fn_transient_rl0
zfs create -V 64m fnzfs/zone1/fn_sec_db0
zfs create -V 64m fnzfs/zone1/fn_sec_rl0

zfs set reservation=100m fnzfs/zone1/fn_cache0
zfs set reservation=100m fnzfs/zone1/fn_permanent_db0
zfs set reservation=64m fnzfs/zone1/fn_permanent_rl0
zfs set reservation=320m fnzfs/zone1/fn_transient_db0
zfs set reservation=256m fnzfs/zone1/fn_transient_rl0
zfs set reservation=64m fnzfs/zone1/fn_sec_db0
zfs set reservation=64m fnzfs/zone1/fn_sec_rl0
#chown fnsw:fnusr  /dev/zvol/rdsk/fnzfs/zone1/*
#chown fnsw:fnusr /devices/pseudo/zfs@0:*
```

2. Configure the datasets in the Local Zone:

```
Zonecfg:zone1>add device
Zonecfg:zone1>set match=/dev/zvol/rdsk/fnzfs/zone1/fn_cache0
Zonecfg:zone1>end
Zonecfg:zone1>add device
Zonecfg:zone1>set match=/dev/zvol/rdsk/fnzfs/zone1/fn_permanent_db0
Zonecfg:zone1>end
Zonecfg:zone1>add device
Zonecfg:zone1>set match=/dev/zvol/rdsk/fnzfs/zone1/fn_permanent_rl0
Zonecfg:zone1>end
Zonecfg:zone1>add device
Zonecfg:zone1>set match=/dev/zvol/rdsk/fnzfs/zone1/fn_transient_db0
Zonecfg:zone1>end
Zonecfg:zone1>add device
Zonecfg:zone1>set match=/dev/zvol/rdsk/fnzfs/zone1/fn_transient_rl0
Zonecfg:zone1>end
Zonecfg:zone1>Add device
Zonecfg:zone1>set match=/dev/zvol/rdsk/fnzfs/zone1/fn_sec_db0
```

```
Zonecfg:zone1>end
Zonecfg:zone1>add device
Zonecfg:zone1>set match=/dev/zvol/rdsk/fnzfs/zone1/fn_sec_rl0
Zonecfg:zone1>end
```

3. Verify (export) and save (commit) the data sets to the Local Zone by entering the following series of commands:

   `zonecfg`

   `zonecvg> export`

   `zonecvg> commit`

Create links required for FileNet Image Services MKF data sets that use raw partitions

Link the IBM FileNet Image Services and MKF data set names to their volume names by creating the `filenet.links` file, entering the correct soft link information, and running the file.

About this task

Repeat the steps in this section on these servers for the FileNet Image Services groups and users:

- Root/index/storage library server during a combined server or entry server installation
- Root/index and storage library server during a dual server installation
- Application server during an application server installation.

Procedure

To create the symbolic links:

1. As a user with root privileges, change to the `/fnsw/dev/1` directory:

   `cd /fnsw/dev/1`

   Tip: If one or more of the subdirectories in this path do not exist yet, use the mkdir -p command to create them.

2. Use your preferred text editor to create and edit the filenet.links file. Include a soft link command for each of the databases that you created or configured in the previous sections. Link the database name to the logical volume where you placed the database by entering a command structured similar to the following:

   ```
   ln -s /dev/vx/disktype/diskgroup/logical_volume/dbname
   ln -s /dev/zvol/disktype/<zpool>/<zone>/logical_volume/dbname (ZFS)
   ```

   Where *logical_volume* is the disk location of the volume and *dbname* (plus the path, `/fnsw/dev/1`) is the data base name. For example:

   ```
   ln -s /dev/vx/rdsk/fndg/fn_cache0  /fnsw/dev/1/cache0
   ln -s /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_cache0  /fnsw/dev/1/cache0  (ZFS)
   ```

   Important: The filenet.links file contents shown here are examples ONLY. (The links you create must reflect the actual allocation of the volumes on your system.) In the filenet.links file, you MUST have unique logical volume assignments for all volumes. (Verify that no two partitions share the same logical volume assignment and that no volume is assigned to a logical volume occupied by any part of the operating system.)

   Your filenet.links must contain link information similar to the following:

   Using Veritas Volume Manager

On a combined (root/index/storage library) server

```
ln -s  /dev/vx/rdsk/fndg/fn_cache0  /fnsw/dev/1/cache0
ln -s  /dev/vx/rdsk/fndg/fn_permanent_db0  /fnsw/dev/1/permanent_db0
ln -s  /dev/vx/rdsk/fndg/fn_permanent_rl0  /fnsw/dev/1/permanent_rl0
ln -s  /dev/vx/rdsk/fndg/fn_transient_db0  /fnsw/dev/1/transient_db0
ln -s  /dev/vx/rdsk/fndg/fn_transient_rl0  /fnsw/dev/1/ transient_rl0
ln -s  /dev/vx/rdsk/fndg/fn_sec_db0  /fnsw/dev/1/sec_db0
ln -s  /dev/vx/rdsk/fndg/fn_sec_rl0  /fnsw/dev/1/sec_rl0
```

On a root/index server

```
ln -s  /dev/vx/rdsk/fndg/fn_sec_db0  /fnsw/dev/1/sec_db0
ln -s  /dev/vx/rdsk/fndg/fn_sec_rl0  /fnsw/dev/1/sec_rl0
```

On a storage library server

```
ln -s  /dev/vx/rdsk/fndg/fn_cache0  /fnsw/dev/1/cache0
ln -s  /dev/vx/rdsk/fndg/fn_permanent_db0  /fnsw/dev/1/permanent_db0
ln -s  /dev/vx/rdsk/fndg/fn_permanent_rl0  /fnsw/dev/1/permanent_rl0
ln -s  /dev/vx/rdsk/fndg/fn_transient_db0  /fnsw/dev/1/transient_db0
ln -s  /dev/vx/rdsk/fndg/fn_transient_rl0  /fnsw/dev/1/transient_rl0
```

Using ZFS

On a combined (root/index/storage library) server

```
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_cache0  /fnsw/dev/1/cache0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_permanent_db0  /fnsw/dev/1/permanent_db0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_permanent_rl0  /fnsw/dev/1/permanent_rl0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_transient_db0  /fnsw/dev/1/transient_db0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_transient_rl0 /fnsw/dev/1/ transient_rl0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_sec_db0  /fnsw/dev/1/sec_db0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_sec_rl0  /fnsw/dev/1/sec_rl0
```

On a root/index server

```
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_sec_db0  /fnsw/dev/1/sec_db0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_sec_rl0  /fnsw/dev/1/sec_rl0
```

On a storage library server

```
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_cache0  /fnsw/dev/1/cache0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_permanent_db0  /fnsw/dev/1/permanent_db0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_permanent_rl0  /fnsw/dev/1/permanent_rl0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_transient_db0  /fnsw/dev/1/transient_db0
ln -s  /dev/zvol/rdsk/<fnzfs>/<zone1>/fn_transient_rl0  /fnsw/dev/1/transient_rl0
```

3. Save the changes.

4. Use the chmod command to change the permission of the filenet.links file:

```
chmod  755  filenet.links
```

   Tip: If you do not change the permission of filenet.links, you cannot run the file.

5. Run the filenet.links file by entering the following commands:

```
cd  /fnsw/dev/1
./filenet.links
```

6. Examine the contents of the /fnsw/dev/1 directory by entering the following command:

```
ls  -lL
```

   The -l option displays the mode, number of links, owner, group, size (in bytes), and time of last modification for each file. The L option displays the file or directory referenced by a symbolic link.

   The directory must contain the linked directories specified in the filenet.links file. If the /fnsw/dev/1 directory does not contain the correct links, verify and, if necessary, update the filenet.links file with any changes, verify the permissions on the filenet.links file, and run the file again.

Modify the port settings (optional)

You can optionally set up the `/etc/rc2.d/S69inet` file to improve the throughput of your IBM FileNet Image Services system. Perform the steps in this section on all servers.

About this task

Important: If the steps in this section do not work, Solaris 10 users can use the SMF (Service Management Facility) manifest files. You can download and enable the sample manifest files (network-anon.xml) from http://opensolaris.org/os/community/smf/manifests/. If you have questions, contact Sun technical support.

This addition expands the number of available ephemeral ports and reduces the time-out delay. This addition is not required, but has been found to be optimal when runningFileNet Image Services software. Make these changes unless you have set these options for other system reasons:

- Ephemeral ports are temporary ports assigned by the IP stack on the server, and are assigned from a designated range of ports for this purpose. When network traffic is extremely heavy, it is possible to run out of ephemeral ports unless you specify a wider range of port numbers in `/etc/rc2.d/S69inet`.
- The **tcp_time_wait_interval** parameter determines the length of time the server waits before reusing a closed ID socket. Although the default value is typically around 240000 milliseconds (four minutes), this parameter can safely be reduced to as little as 30000 milliseconds (30 seconds) on high-speed networks.

Procedure

To modify the port settings:

1. With your preferred text editor, create a new, blank `/etc/rc2.d/S69inet` file, if one does not already exist.
2. As a user with root privileges, verify you have write permission on the this file by entering: `chmod 754 /etc/rc2.d/S69inet`
3. To ensure proper ownership of the file, verify that the owner is set to root and the group is set to sys. If the file does not have the proper ownership, run the following command:

   `chown root:sys S69inet`
4. Use your preferred text editor (such as vi) to modify the `/etc/rc2.d/S69inet` file.
5. Add the following lines to the end of the file:

   ```
   ndd -set /dev/udp udp_smallest_anon_port 42767
   ndd -set /dev/udp udp_largest_anon_port 65535
   ndd -set /dev/tcp tcp_smallest_anon_port 42767
   ndd -set /dev/tcp tcp_largest_anon_port 65535
   ndd -set /dev/tcp tcp_time_wait_interval 30000
   ```
6. Save your changes and exit. These changes will go into effect when the server is restarted.

Solaris Installation Worksheet

Use the installation worksheet to help you gather information about your hardware and software environment. You will need this information to complete a successful installation.

System Information

Record the Solaris Server information. Use this information for easy reference during the installation process. The information includes server memory, IP address, network address, SSN, domain name and organization name.

Procedure

To record the Solaris Server information:

1. Obtain the following user name information:

   You can accept the standard names for the IBM FileNet Image Services user or database users or you can choose your own.

Table 9. Solaris System user information

Standard User Name	New User Name (optional)	Password
fnsw The primary user and administrator of the Image Services software.		
f_sw The primary user of the Image Services relational databases and eProcess.		
f_maint Used by GDB_exim, a generic database export/import utility. Also used for troubleshooting the relational database.		
f_sqi Used to access features of IS Toolkit and IS Process Analyzer.		
f_open The default database logon user used by the SQI subsystem of IS Toolkit.		

2. Enter the version of the Solaris Operating System:_____ (must be Solaris 9 or 10 OS, either 32-bit or 64-bit)
3. Record the character set used by the operating system:_____ (for example, USASCII7, ISO8859-2, ISO8859-2, and so on)
4. Record the appropriate server information in the table below.

Table 10. Solaris Server Information

Installation Information	System Information
Server Memory	
Server IP Address	
Network Address	
System Serial Number (ssn)*	
Domain Name	
Organization Name	

Important: The ssn is written onto all storage media and must be unique for each FileNet Image Services system. If you have more than one Image Services system (domain), each must use its own unique ssn to prevent potential

problems if media are ever transferred from one IS system to another. The valid range of SSNs is 1000 through 2147483646.

Note: The Solaris operating system does not allow an underscore (_) as part of the server name. However, the FileNet Image Services software will accept the underscore as part of the domain name. The FileNet Image Services domain name does not necessarily have to be the same as the server name.

Peer system information

Record the peer system information of systems that will be communicating with your IBM FileNet Image Services system to be used for easy reference during the installation process. This includes the Domain name, System Serial Number (SSN), and IP address of each FileNet Image Services system (peer system) that is going to be communicating with this FileNet Image Services system.

The standard IPv4 addresses contain four decimal numbers separated by periods (for example, 192.0.2.4). The IPv6 addresses contain up to eight groups of hexadecimal numbers separated by colons (for example, 2001:DB8:0:1::2008:6).

Make sure the server's name, IP address, and the IP addresses of any remote systems that will be connected are properly configured in the /etc/hosts file, or with NIS. This is especially important if your system is using IPv6 protocol.

Table 11. Solaris Peer System Information

Domain:Organization Name	System Serial Number (SSN)	Network Address

(You can configure up to a total of 16 peer systems.)

Note: When adding addresses for peer systems in fn_edit, use the IPv4 format rather than the IPv6 format.

Printer server information

Record the printer server information for each printer on your system to be used for easy reference during the installation process. This includes the NCH Name, Printer Type, and Printer Server IP Address.

Record the information for each printer on your system in the table below. The standard IPv4 addresses contain four decimal numbers separated by periods (for example, 192.0.2.9). The IPv6 addresses contain up to eight groups of hexadecimal numbers separated by colons (for example, 2001:DB8:0:1::2008:6).

Table 12. Solaris Printer Server Information

NCH Name	Printer Type	Printer Server IP Address

Table 12. Solaris Printer Server Information (continued)

NCH Name	Printer Type	Printer Server IP Address

Storage Library Information

Record the Solaris Storage Library information on your IBM FileNet Image Services system for easy reference during the installation process. This includes SCSI parameter information, model related information, and device information.

Procedure

To record the Solaris Storage Library information:

1. Determine the following Sun optical device SCSI parameters. The table provides a description of each SCSI parameter and provides space to record the correct setting for your system.

Table 13. Solaris Storage Library Information

SCSI Parameter	Setting	Parameter Description
System Board Number		The System Board Number corresponds to the system board that the SCSI bus is connected to. (Only SPARCserver 1000 and 2000 models currently utilize multiple system boards.)
SBus Slot Number		The SBus Slot Number is the slot number that the SCSI controller connected to the particular device resides in within the server. (Some servers also provide an integrated SCSI controller that does not utilize a SBus slot; however, these integrated SCSI controllers always are assigned a SBus Slot Number which may vary depending on the server model.)
SCSI Target Number		The SCSI Target Number is the SCSI Target ID that the device has been configured for. (This value is determined by inspecting switches or control panels on the particular device.)

Table 13. Solaris Storage Library Information (continued)

SCSI Parameter	Setting	Parameter Description
SCSI Logical Unit Number (LUN)		The SCSI Logical Unit Number is the SCSI LUN that the device has been configured for. (This value is determined by inspecting switches or control panels on the particular device.)

Tip: During the fn_edit configuration process, you might need to enter one or more values for these parameters.

The following table shows acceptable values for the System Board and SBus Slot Number attributes by SPARCserver Model.

Table 14. SPARCserver Model Parameters

Model	System Board Number	Internal SCSI Board Slot	SBUS Slot Number
SPARCserver 5	0	0	1-3
SPARCserver 20	0	15	0-3

If necessary, see the Sun server specific documentation to determine how the physical SBus slots or System boards are numbered. (For SPARCserver 1000 and 2000 models, see your Sun documentation.)

2. Record the appropriate Storage Library device information for each Storage Library device on your system in the table below using the two previous tables.

Table 15. Storage Library Information

Storage Library Device (SLD) Information	SLD 1	SLD 2	SLD 3	SLD 4
Storage Library Type (ODU, OSAR 96, OSAR 125, and so on)				
RS-232 Port Number (1-9)				
System Board Number				
SBUS Slot Number				
SCSI Target Number				
SCSI Logical Unit Number				

3. Record the path for the Storage Library Device Driver here:
_____.

Optical drive information

Record the Solaris optical drive information as it pertains to your IBM FileNet Image Services system's optical drive type, SCSI adapter, SCSI ID and logical unit number. This is used for easy reference during the installation process

Record the appropriate Optical Drive information for each optical drive on your system in the table below.

Table 16. Solaris optical drive information

Optical Drive Information	Drive 1	Drive 2	Drive 3	Drive 4
Drive Type (Hitachi_II, and so on)				
SCSI Adapter Number (0-3)				
SCSI ID Number (0-6)				
Logical Unit Number (0-3)				

Record the path for the Optical Drive Driver here:
_____.

Cache percentages

Record the minimum and maximum percentage sizes for Solaris cache types.

This table contains cache information in a single location for easy reference during the installation process. Determine the minimum and maximum cache sizes (in %) for the following caches. Record the cache information you gather in the table below.

Table 17. Solaris cache percentages

Cache Type	Default Size (%) Min./Max.	Min. Size (%)	Max. Size (%)
Retrieval	20% /20%		
System Print	10% /20%		
Application Print	10% /30%		
Batch	10% /60%		

Use the *IBM Capacity Planning Tool* to find this information.

Chapter 3. Installing the relational database software

The Database Administrator is responsible for installing the appropriate version of the Relational Database Management software.

Perform the steps in this section on these servers:

- Root/Index server during a Dual server installation.
- Root/Index/Storage Library server during a Combined server or Entry server installation.
- Application server with WorkFlo Queue services or SQL services.

IBM FileNet Image Services on Solaris supports the following two Relational Database Management Systems. Skip to the section for the one that is going to be installed on this FileNet Image Services system:

- "Oracle 10g and Oracle 11g"
- "Installing IBM DB2" on page 30

For more information, see the appropriate document:

- *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software*
- *IBM FileNet Image Services Guidelines for Installing and Updating Site-Controlled Oracle Software on UNIX Servers*

To download these documents, see "ibm.com and related resources" on page v.

Oracle 10g and Oracle 11g

After Oracle has been installed, the Database Administrator must provide Oracle variables and table space information.

Oracle variables

Your IBM FileNet Image Services system has Oracle variables that must be determined and configured along with password information.

$ORACLE_HOME: _____

$ORACLE_SID: _____

Oracle user name:_____

DBA group name: _____

f_sw password: _____

f_sql password: _____

f_maint password: _____

f_open password: _____

Table space names and sizes

Your IBM FileNet Image Services system can be set up with the standard table space names and the minimum table space sizes.

Table 18. Table space name and size information

Standard table space names	Table space name you assign	Minimum table space size (MB)	Table space size you create (MB)
fnsys_ts		200	
fntmp_ts		400	
fnidx_ts (optional for indexes)		200	
fnusr_ts (optional for WorkFlo Queue Services)		200	

After you have this information, you are ready to install the IBM FileNet Image Services software, continue with Chapter 4, "Installing FileNet Image Services software," on page 33.

Installing IBM DB2

The Database Administrator is responsible for installing the DB2 software and creating the DB2 database for IBM FileNet Image Services.

- The DB2 server software must be installed on a dedicated remote AIX or Solaris server. See Chapter 2 of the *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software* for further information.
- The DB2 client software must be installed on the FileNet Image Services server and linked to the remote DB2 database. See Chapter 3 of the *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software* for details.

You can give the DB2 Guidelines document to the Database Administrator. To download the guidelines from the IBM support page, see "ibm.com and related resources" on page v.

Gathering DB2 database information

The Database Administrator must provide system-specific user information and table space information associated with the DB2 database. This information includes default user and group names and table space names with minimum sizes.

After DB2 has been installed, the Database Administrator must provide the following information.

Table 19. User information

Owner/User	Default user name	User name you choose	Default group name	Group name you choose
Instance Owner	**db2inst1**		**db2iadm1**	
Fenced user	**db2fenc1**		**db2fadm1**	
DB2 Administrator server user	**db2as**		**db2asgrp**	

Table 20. Tablespace information

Standard table space name	Tablespace name you assigned	Minimum size (MB)	Tablespace size you create (MB)
userspace1		200	

```
f_sw password: _____

f_sqi password: _____

f_maint password: _____

f_open password: _____

DB2 Database Alias Name: _____     (indexdb, for example)

User Tablespace location: _____     (userspace1, for example)
```

After you have this information, you are ready to install the IBM FileNet Image Services software, continue with Chapter 4, "Installing FileNet Image Services software," on page 33.

Chapter 4. Installing FileNet Image Services software

The System Administrator is responsible for completing the tasks in this chapter. As part of installing the IBM FileNet Image Services software, install the user environment templates, set up passwords, and set file ownerships and permissions.

This chapter explains how to install the FileNet Image Services software. It covers software installation issues that include:

- Double-checking the connection to a remote relational database, if necessary.
- Installing FileNet Image Services software
- Installing the user environment templates
- Setting up FileNet Image Services passwords
- Setting file ownerships and permissions

Tip: To log in as a specific user to run the FileNet Image Services tools and software, you must add this user to the **fnusr** and **fnop** groups.

Checking the connection to a remote Oracle database

If the Oracle database is located on a remote server, set a system environment variable, **LOCAL** equal to the **GLOBAL_DBNAME** set in the `tnsnames.ora` file.

About this task

Perform the steps in this section only on servers with Oracle Client software. Check the connection between the Oracle Client and the remote Oracle database.

Procedure

To verify that the internal Oracle networking is active and functional:

1. Enter a `sqlplus` command in this format: `sqlplus` *user*/*password*`@`*GLOBAL_DBNAME*. For example, if the *user* is sys, the *password* is passSYSword, and the *GLOBAL_DBNAME* is Michigan_IDB.world, you might enter:

   `sqlplus sys/`*passSYSword*`@Michigan_IDB.world`

2. If there are no errors, Oracle networking is working successfully. Exit from `sqlplus`.

   Tip: To double-check, enter:

   `tnsping Michigan_IDB.world`

Checking the connection to the remote DB2 database

You need to enter DB2 commands to check the link to the DB2 database.

About this task

Perform the steps in this section only on servers with DB2 Client software.

Procedure

To check the link to the DB2 database:

1. Log onto the IBM FileNet Image Services server as the DB2 Client instance owner (such as **fnsw**).

2. Enter DB2 commands:

```
db2
DB2>  connect to db_alias_name user f_sw using f_sw password
```

where *db_alias_name* is the database alias name of the DB2 database on the remote server, and *f_sw password* is the password of the **f_sw** user set up by the Database Administrator.

Running the FileNet Image Services installation program

You can now install the IBM FileNet Image Services software on all the servers on your system.

Perform the steps in this section on all servers.

- If you are installing FileNet Image Services on a multiserver system, install, configure, and start FileNet Image Services on the Root server before installing the software on the other servers.
- Verify that the /fnsw and /fnsw/local file systems are mounted before you install the FileNet Image Services software.
- At the system prompt, enter the mount command to see a list of what is currently mounted. If you are installing from CD, verify that Info Explorer is not mounted on the CD. If it is, unmount it.
- When you install FileNet Image Services software, the COLD software is also installed. However, you must be licensed to use the COLD application.
- The FileNet Image Services installation program performs two tasks:
  - Checks the system to verify configuration prerequisites.
  - Installs the FileNet Image Services software.

  You can choose to run both, or only the system check.

  The System Check inspects the server for prerequisites and lists any warning and error conditions in two locations: Informational windows on your screen and in report and log files in the /fnsw/local/logs/install/4.2.0/ directory.

Finding the FileNet Image Services installation log files

The IBM FileNet Image Services installation program creates two log files to record the progress and status of the installation. The information in these log files is useful in diagnosing problems that occur during the installation.

The log files are located in the /fnsw/local/logs/install/4.2.0 directory.

- **IS_4.2.0.log**: Contains the progress, results, and completion status for the installation. See this file to get further information about any errors or warnings that you received during the installation.
- **FileNet_Image_Services_InstallLog.log**: This secondary installation log file contains more detailed information about the installation status for each file and installation step. See this file for more information if the IS_4.2.0.log file reports an Installation Status of FATAL_ERROR or NONFATAL_ERROR.

Starting the FileNet Image Services installation program

You can run the IBM FileNet Image Services installation program in graphical, console, or silent mode. The graphical mode is the default graphical interface, console mode offers a plain text interface for workstations that do not support graphical mode, and silent mode displays nothing on the screen while the installation program is running.

Procedure

To start the FileNet Image Services installation program:

1. Log on as a user with root privileges.
2. For Graphical Installation only: If you plan to run this program from a remote terminal, export the display from the server to your current terminal.

   * In the Bourne shell, enter:
     ```
     DISPLAY=<host_identifier>:0
     export DISPLAY
     ```
   * In the Korn shell, enter:
     ```
     export DISPLAY=host_identifier:0
     ```
   * In the C shell, enter:
     ```
     setenv DISPLAY host_identifier:0
     ```
   where *host_identifier* is the server identifier, either a name or an IP address.
3. For Graphical Installation only: If you are running the installation program from a remote terminal, allow access to the host display by entering the following command at the remote terminal: `xhost +` If the server has an X Console, rather than an ASCII terminal, enter the `xhost +` command there, too.

   Attention: If you used the `su` command to switch from any user to root user, you must enter the `xhost +` command at the original CDE login window. Test your DISPLAY setting by entering the following command:
   ```
   xclock &
   ```

   If the clock appears on your remote terminal screen, the *DISPLAY* variable was exported correctly. If you do not see the clock, use the export or setenv command again by using the IP address rather than the server name.
4. For silent installation only: Locate the appropriate `options.txt` file in the downloaded software image or on the software CD, and copy the file to a local directory on your server. (You can rename it to something shorter, like `opt.txt`) The `options.txt` file contains standard responses to the installation prompts. Edit this file to make any appropriate changes and save the file. The options and their default values are fully described in the file. Review the silent installation log file to determine the progress and results of the installation.
5. If you plan to run the installation program in silent mode, and you determined earlier that the `/var/tmp` directory does not have enough free space, set the IATEMPDIR environment variable to an alternate directory. The alternate temporary directory must be outside the `/fnsw` directory structure. For example, you might enter:

   * In the Bourne shell, enter:
     ```
     IATEMPDIR=/othertemp
     export IATEMPDIR
     ```
   * In the Korn shell, enter:
     ```
     export IATEMPDIR=/othertemp
     ```
   * In the C shell, enter:

```
setenv IATEMPDIR /othertemp
```
where *othertemp* is the full file path to the alternate temporary directory.

6. The InstallAnywhere installation program requires that the PATH environment variable contain the location of the gzip program. InstallAnywhere uses the gzip program to uncompress the software files. . For example, you might enter:

   - In the Bourne shell, enter:
     ```
     PATH=/usr/bin:.:$PATH
     export PATH
     ```

   - In the Korn shell, enter:
     ```
     export PATH=/usr/bin:.:$PATH
     ```

   - In the C shell, enter:
     ```
     setenv PATH /usr/bin:.:$PATH
     ```

7. As a user with root privileges, change to the directory where the FileNet Image Services installation program is located and start the installation program.

   - Graphical mode
     ```
     ./is_4.2.0_sun.bin &
     ```

     Tip: The trailing "&" character detaches the installation program from the console window so that it can run in a separate window. Use the console window to correct any configuration errors reported by the installation program.

   - Console mode:
     ```
     ./is_4.2.0_sun.bin -i console
     ```

   - Silent mode:
     ```
     ./is_4.2.0_sun.bin -i silent -f /tmp/opt.txt
     ```

   Important: `/tmp/opt.txt` is the location of the text file you modified in an earlier step. Specify its full path on the command line. For example, **... -i silent -f /fnsw/local/tmp/opt.txt**.

   If you run the system checks in silent mode, check the log file in `/fnsw/local/logs/install/4.2.0` to determine the results. The name of the log file is `IS_4.2.0.log`.

8. During the system check, the installation program verifies the status of server characteristics in these categories:

   - FileNet Image Services users and groups
   - Operating system checks
   - Hardware checks

   The same checks are performed for both the **System Checks only** and the **System Checks and Install Image Services** options. The labels in the status column are also color-coded:

   - **Pass** (green) indicates that the check has passed.
   - **Optional** (yellow) indicates that the check encountered a value that might affect the performance of the FileNet Image Services system, if it is not corrected. However, the installation program can continue.
   - **Fail** (red) indicates that a check has failed and the installation program cannot continue.

   Some system checks produce only warnings, while others prevent the installation of the FileNet Image Services software:

Condition	Severity
Not logged on as superuser	Prevents installation
Insufficient file system space	Prevents installation
Insufficient swap space	Optional - installation continues
Incompatible host name	Prevents installation
Incompatible O/S	Prevents installation
Missing debugger	Optional - installation continues
Kernel parameter out of range	Optional - installation continues
Missing FileNet user/group	Prevents installation
Incorrect FileNet user/group membership	Prevents installation

The system check information is recorded in the `IS_4.2.0.log` file for your reference.

Hardware checks

In the first system check screen, the installation program lists the resource, how much you need, how much you have, and either Pass or Fail. If a configuration item, such as `insufficient file system space` or `kernel parameter out of range`, does not pass the system check, you can correct it while the installation program is still running.

Procedure

To run the hardware checks after correcting a configuration item:

1. Open another window on the desktop and make the necessary change, such as one of the following items:
   - free disk space
   - memory
   - swap space
2. Then, click **Previous** on the installation program display to return to the previous screen, and click **Next** again to rerun the checks.

Operating system checks

The Operating System Checks screen displays system information pertaining to the operating system and the kernel parameters.

Check the following values for your system:
- Host name
- O/S version
- Debugger
- Kernel parameters

Tip: If any kernel parameters fail the system check, click **Previous** to return to the previous screen. Open another window and correct kernel parameters. Click **Next** on the installation program screen to run the kernel parameter check again.

FileNet Image Services user and groups check

The FileNet User and Groups Check screen displays the required user and group memberships for IBM FileNet Image Services.

The FileNet User and Groups Check window displays the following information:
- FileNet Image Services groups
- FileNet Image Services users
- Database user and group (Oracle only)

The **Status** column indicates whether the group in the **Name** column exists and contains the appropriate users listed in the **Required Members** column.
- Green plus sign (+) indicates that the group and member users are present.
- Red minus sign (-) indicates that the group or member users are missing.

Tip: Click **Previous** to create the missing users and add the users to the appropriate groups. After creating the missing users and adding them to the groups, exit the installation program, log out, and log back in for the new users and groups to take affect. Then, restart the installation program. Then click **Next** again to rerun this check. Oracle requires an additional user and group (DB2 does not). Since the Installer does not know whether FileNet Image Services will be configured to use Oracle or DB2, it shows a place holder for the Oracle user and group. This is for informational purposes only, and does not prevent the system check from completing successfully.

Finishing the system checks

You need to determine if the system checks were successful. If there are errors or warnings, you need to take corrective action and run the checks again.

When the System Check is complete it has either passed or failed.
- If the System Checks failed with errors, you must fix all the error conditions reported. You can then run the System Checks again.
- If the System Checks passed all the tests, but generated warnings for the swap space, debugger, or kernel parameter tests the final screen will indicate this. Check the log file for additional items you might want to correct.
- If the System Checks completed successfully and you selected the option to install IBM FileNet Image Services software, the installation program continues with the section, "Install FileNet Image Services software" on page 70.

Rerunning the FileNet Image Services installation program

If the System Checks do not pass, review the log file in the `/fnsw/local/logs/install/4.2.0/` directory. The most recent information is appended to the end of this file.

After you have made the changes required by the System Checks, return to "Starting the FileNet Image Services installation program" on page 35 and run the System Checks again.

Installing FileNet Image Services

After you start the IBM FileNet Image Services installation program, the product software installs automatically. The installation takes from 10 to 20 minutes, depending on the processor speed of your server.

Procedure

To complete the software installation:

1. As the FileNet Image Services installation program continues, the Summary screen displays your system information. Verify that the information is correct.
2. As the FileNet Image Services software installs, the installation program displays a progress bar. If you are installing FileNet Image Services on several servers simultaneously from the same location, the installation might take a while longer.
3. When the software installation is finished, the installation program creates an uninstallation program. For example, the installation program creates `/fnsw/IS_uninstaller/uninstall_is.bin`, and then verifies the version information.
4. The final screen indicates success and reminds you to check the installation program log in the `/fnsw/local/logs/install/4.2.0/`. directory.

Chapter 5. Configuring the FileNet Image Services software

Configure your IBM FileNet Image Services by following the software configuration procedures in this section.

Software configuration procedures include:
- Setting theFileNet Image Services software user environment
- Using the System Configuration Editor to configure databases and services
- Building and initializing the root server
- Configuring RES, Cross-Committal, or Multi-Committal systems

Install the required pre-startup fixes

At this time, install only the fixes that are required to start the IBM FileNet Image Services software. Install these fixes on all servers.

You can retrieve these fixes from the IBM Information Management support page "ibm.com and related resources" on page v.

Install any other fixes after the FileNet Image Services installation has been completed.

Install the user environment templates

Use the inst_templates tool to set up profile and environment files that are customized for IBM FileNet Image Services.

Perform the steps in this section on all servers.

Run the inst_templates tool as either the FileNet Image Services user (such as fnsw) or a user with root privileges.

The inst_templates tool creates or modifies environment files (for example, `.cshrc`, `.login`, `.profile`, and others). Before each file is modified, you are prompted to confirm the change to the file.
- If you accept the change (by entering **y**), the existing file is renamed with a old.n extension (where n is incremental). A new file is created by using the original file name.
- If you decline the change (by entering **n**), the file is not changed or moved.

If you already have customized the environment files in a particular user directory, answer **n** (No) to each of the prompts. Merge the settings in the templates with your customized environment files. The templates are in `/fnsw/etc`. If you run the inst_templates tool more than one time, the existing `.old` files are not overwritten. The `.old` files are given number extensions (`.old.n`), and each time you run the inst_templates tool after that, n increases (such as `.old.1`, `.old.2`).

Set up FileNet Image Services software user environment

The FileNet Image Services user, such as fnsw, must have its own environment variables set.

About this task

Depending upon the shell you are using, an appropriate environmental setup can be installed by copying the corresponding template file from `/fnsw/etc` and adding your own preferences.

Procedure

To install the user templates:

1. If you are logged on as root user, switch user to fnsw (su - fnsw).
2. Enter the following command to copy all of the template files into the correct directory, and set up the fnsw user environment:

   `/fnsw/etc/inst_templates`

   a. Answer the prompts as appropriate for your server. Do not assume the defaults are correct.

   b. Relational databases are only configured on servers with Index services, WorkFlo Queue Services (WQS), VWServices, or SQL services. If you are configuring a separate Storage Library server, or an Application server without one these services, select **0=none**; if the server has Oracle software installed, select **1=Oracle**, if the server has DB2 software installed, select **2=DB2**.

   ```
   Enter the relational database type configured on this server (0=none,
   1=Oracle, 2=DB2) [2]:
   ```

   If you are planning to use an existing Oracle or DB2 instance, accept the default RDBMS-related values listed at each prompt.

   c. If DB2 software exists on this server, enter the user ID of the relational database instance owner.

   ```
   Enter the DB2 instance owner [fnsw]:
   ```

   d. If Oracle software (either client or server software) exists on this server, enter the full pathname of the directory on this server where that software is located. If DB2 software exists on this server, enter the path to the sqllib directory within the DB2 Client instance owner's DB2 home directory.

   ```
   Enter the relational database home directory [/home/fnsw/sqllib]:
   ```

3. When inst_templates is finished, log out as the FileNet Image Services software user and log back in to put the templates into effect.

Set up the root user environment

Setting up the root user environment is **required** for servers with DB2 or Oracle relational database software. Setting up the root user environment is **optional** for all other servers such as Storage Library servers and certain Application servers that do not have relational database software.

Before you begin

The root user might need its own FileNet Image Services environment variables set. Complete the steps in this section if you do not already have a specialized root environment already established on your system (For example, a .login file with specific system-related entries). Otherwise, skip this section.

Depending on the shell you are using, you can install an appropriate environmental setup by using the inst_templates command to copy the corresponding template files from the`/fnsw/etc` directory. After the templates have

been copied, you can add your own preferences to these files.

Procedure

To set up the root user environment:

1. Log on as a user with root privileges.
2. Enter the following command to copy all of the template files into the correct directory, set up the root user environment:

   `/fnsw/etc/inst_templates`

   a. Answer the prompts as appropriate for your server. Do not assume the defaults are correct.
   b. Answer the relational database prompts exactly the same as you did for the FileNet Image Services software user such as fnsw on this server.
3. When inst_templates is finished, log out to the system prompt and log back in as root user to put the templates into effect.

Set file ownership and permissions

The fn_setup program sets the permissions for all files under `/fnsw` and `/fnsw/local` directories using a permission_table that is upgraded with each new FileNet Image Services release.

About this task

Use the fn_setup tool to verify the following:

- Permissions are set correctly for the FileNet Image Services software.
- All the necessary directories have been created.
- Permissions for these directories and system files are set correctly.

Tip: The fn_setup program attempts to set the permissions for all files under `/fnsw` and `/fnsw/local` directories using a permission_table that is upgraded with each new FileNet Image Services release. If non-Image Services files are placed in the `/fnsw` directory structure, a local_permission_table needs to specify the appropriate permissions for these files. See *IBM FileNet Image Services System Administrator's Companion for UNIX* for details. To download this document from the IBM support page, see "ibm.com and related resources" on page v.

Even though fn_setup runs as the root user, fn_setup might not be allowed to set permissions on some secured files. If fn_setup cannot change permissions on a file, it logs an error and continues. Run fn_setup the first time as a user with root privileges.

Procedure

1. As a user with root privileges, enter:

   `fn_setup`
2. Answer all prompts with information related to your system.

   a. The NCH server is generally the Root server. If you are installing a separate Storage Library server or an Application server, enter **2=no**.

      `Is this the NCH server (1=yes, 2=no)  [1]:`
   b. The NCH server name is generally the name of the Root server. If you are installing a separate Storage Library server or an Application server, enter the name of the Root server.

```
                  Enter NCH  server name [aixvenice:ExampleCo]:
```
c. The system serial number should be the serial number of the server you specified in the previous step, generally the Root server.
```
                  Enter system serial number  [11008016nn]:
```

Important: The SSN is written onto all storage media and must be unique for each FileNet Image Services system. If you have more than one FileNet Image Services system (domain), each system must use its own unique SSN to prevent potential problems if media are ever transferred from one FileNet Image Services system to another. The valid range of SSNs is 1000 through 2147483646.

d. Relational databases are only configured on servers with Index services, WorkFlo Queue Services (WQS), VWServices, or SQL services. If you are configuring a separate Storage Library server, or an Application server without one these services, select **0=none**; if the server has Oracle software installed on it, select **1=Oracle**; if the server has DB2 software installed, select **2=DB2**.
```
                  Enter the relational database type configured on this server (0=none, 1=Oracle, 2=DB2) [1]:
```
If you plan to use an existing DB2 or Oracle instance, accept the default RDBMS-related values listed at each prompt.

e. If DB2 software exists on this server, enter the DB2 home directory of the owner of the DB2 Client instance. If Oracle software (either client or server software) exists on this server, enter the full path name of the directory on this server where that software is located.
```
                  Enter the RDBMS home directory [/opt/oracle/client/11gR1]:
```

Tip: If you are configuring a FileNet Image Services system with a **remote Oracle database server**, the RDBMS home directory is the location of the client software on the FileNet Image Services server.

f. If Oracle software (either client or server software) exists on the server, enter the user and group IDs at the following prompts.
```
                  Enter the RDBMS user ID [oracle]:
                  Enter the RDBMS group ID [dba]:
```

3. The fn_setup tool then displays the information that you supplied so you can confirm your entries:
```
This is the setup configuration:
      NCH server name:  aixvenice:ExampleCo
      SSN:  11008016xx
      Relational database type:  Oracle
      Relational database home:  /opt/oracle/client/11gR1
      Relatioal database user ID:  oracle
      Relational database group ID:  dba
      Relational database ID:  IDB
Do you want to continue (y/n) [y]:
```
Click **Return** to continue with the next step. If you type **n** for no, you exit to the system prompt; return to Step 1 and run fn_setup again.

Restart the server

Restart the server to complete your changes.

About this task

Perform the steps in this section on all servers.

Important: All RDBMS users must be logged off the server and the RDBMS instance must be shutdown before you run the following system shutdown command. Failure to do so could result in a corrupted database.

Procedure

To restart the server:

As a user with root privileges, restart the server by entering the following command (depending upon your operating system): **/etc/shutdown -i6 -g0 -y**. The restart process might display FileNet Image Services error messages because the system is not yet configured.

Continue with the server configuration

Depending on the type of server that you are configuring, combined or dual server, application server or storage library server, skip to the appropriate section to continue the server configuration.

Procedure

To continue with the software installation:
1. For a Combined server or Dual server system, continue with the next section, "Log on to the configuration database."
2. If you are adding an Application server, skip to the section, "Configuring the Application server" on page 76.
3. If you are adding a Storage Library server, skip to the section, "Configure the Root server" on page 89.

Log on to the configuration database

This procedure verifies system information as well as database and domain names.

About this task

Perform the steps in this section on the following servers:
- Root/Index server during a Dual server installation
- Root/Index/Storage Library server during a Combined server or Entry server installation)
- Application server running WorkFlo Queue Services or SQL Services.

Procedure

To create a new configuration database:
1. Log on to the FileNet Image Services server as the FileNet Image Services software user, such as **fnsw** from an X station, a workstation that supports X Windows or Common Desktop Environment (CDE), or a PC with an X Windows emulator.
2. Export the display from the server to your current terminal.
   - In the Bourne or Korn shell, enter:
     ```
     export DISPLAY=host_identifier:0
     ```
   - In the C shell, enter:
     ```
     setenv DISPLAY host_identifier:0
     ```

where *host_identifier* is the server identifier, either a name or IP address.

3. Allow access to the server display by entering this command at your current terminal:

```
xhost +
```

Important: If you used the **su** command to switch from any user to root user, you must enter the xhost + command at the original CDE login window.

Tip: Test your DISPLAY setting by entering: `xclock &`

If the clock appears on your remote terminal screen, the DISPLAY variable was exported correctly. If you do not see the clock, try the export or setenv command again using the IP address rather than the server name.

4. As the FileNet Image Services software user, such as fnsw, start X Windows (if you have not already done so).

5. Open a new X window, and enter the following command:

```
fn_edit  &
```

Important: If the Open Configuration Database dialog box displays instead of the New Configuration Database dialog box, you have an existing FileNet Image Services configuration (cdb) file. Click **Cancel**, then from the **File** menu, select **New**.

If you are installing FileNet Image Services software on the system for the first time, the Configuration Editor program will detect that no databases exist and will open a New Configuration Database automatically. Otherwise, Configuration Editor will determine your database name and use it, along with your Domain Name.

6. Verify that the database and domain names are correct. (The two-part domain name is set up as follows: *Domain*:*Organization*.)

7. From the **Database Template** menu, select a template type from the following template choices:
   - **Combined server System**
   - **Dual servers System**
   - **Remote Entry System**
   - **WorkFlo Management System**

8. After you have verified the domain information and selected the template type, click **OK**.

9. You receive several query prompts. The prompts you receive depend on which template you selected earlier.

   Tip: Use the online help for more instruction on answering the prompts for each template type. Select the **Help** menu option in the Configuration Editor. Also you will be prompted to enter information from the worksheet that you completed earlier. Refer to the Installation worksheet for your operating system.

   When you are prompted for information about your relational database management system, DB2 or Oracle, use the information that was supplied to you by the Database Administrator when the RDBMS software was installed. When you are prompted for the relational database type and release version, select the appropriate type and version for your installation. See Chapter 3, "Installing the relational database software," on page 29.

   In addition to prompts for other system information, you are prompted:

- Do you want to use file systems for MKF databases?
- Select the relational database type (DB2 or Oracle).
- For DB2, enter and verify the passwords assigned to:
  - f_sw
  - f_maint
  - f_sqi
  - f_open
- Enter the DB2 home directory (for example, /home/db2inst2/sqllib)
- Enter the relational database name.
- Enter the user tablespace name.

After you have answered all of the template prompts, you will receive a message stating that the configuration is complete.

10. Now you can select any of the available tabs from the FileNet Image Services System Configuration Editor window to review or change the current configuration settings.

Tip: When you use the various configuration tabs in the System Configuration Editor window, click on a tab, complete the fields as instructed, and immediately click on the next tab (without exiting), as directed. Each window has a help button that provides information you might need to complete the fields.

Select and configure a relational database instance (if applicable)

This procedure assumes that the table spaces and databases that you specify in the System Configuration Editor either already exist or that you will create them before you initialize the IBM FileNet Image Services databases.

For **DB2**, see the *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software*. For **Oracle**, see the *IBM FileNet Image Services Guidelines for Installing and Updating Site-Controlled Oracle Software on UNIX Servers*. To download these guidelines from the IBM support page, see "ibm.com and related resources" on page v. The Database Administrator might have supplied this information in the section, Chapter 3, "Installing the relational database software," on page 29.

Continue with the appropriate subsection:
- "DB2"
- "Oracle" on page 48

DB2
Verify the database and user table space names and settings.

Procedure

To verify the database and user table space names and settings:
1. Click **Relational Databases**, then click the **RDB Objects** subtab.
2. On the **RDB Objects** subtab, verify the database name and the tablespace name in the **Location** column:
   - **Database name**, such as indexdb.
   - **User Tablespace name**, such as userspace1.
3. On the **DB2** subtab, verify:

- **Version** - must match one of the compatible versions shown in the *Hardware and Software Requirements for FileNet Image Services* document.
- **Password Expiration Policy** - This field lists the number of days that the f_sw, f_maint, f_sqi, and f_open passwords remain in effect before they expire. The default value is 60 days. To change the default, enter a new value in this field. A blank field is not permitted, and a value of 0 is equivalent to "Never Expires."
- **Notify Administrator** - This field lists the number of days before password expiration that the administrator will be reminded to update the password. The default value is 14 days before the password expires. To change the default, enter a new value in this field. This value must always be less than or equal to the password expiration value. A blank field is not permitted, and a value of 0 would mean notification on the day the password expires.

Oracle

Define the table space names for an Oracle database.

Procedure

To define the table space names:

1. Click the **Relational Databases** tab, then click the **RDB Objects** subtab.
2. In the **Location** column of the RDB Objects window, click a cell and replace the default FileNet Image Services table space names with the site-specific table names. While replacing the table space names, use the following criteria:
   - Change all occurrences of fnsys_ts to the name of your dedicated FileNet Image Services default table space.
   - Change all occurrences of fntmp_ts to the name of your dedicated FileNet Image Services temporary table space.
   - If an optional fnusr_ts was created for WorkFlo Queue Services, change all occurrences of the name to your dedicated FileNet Image Services user table space.
   - If an optional fnidx_ts was created for indexes, change all occurrences of the name of your dedicated FileNet Image Services index table space.

   The FileNet Image Services software uses the table space names entered in the **RDB Objects** subtab. The table space names specified in the RDB Objects list must exist before you initialize the FileNet Image Services databases.
3. On the **Oracle** subtab, verify that the Version matches one of the compatible versions shown in the *Hardware and Software Requirements for FileNet Image Services* document.
4. Skip to the section, "Verify the FileNet Image Services character set."

Verify the FileNet Image Services character set

The default character set should match the current operating system character set and the RDBMS character set.

Procedure

To verify the FileNet Image Services character set

1. On the **System Attributes** tab, scroll to the right and check the settings for **Default Character Set** and **Former Character Set**. On a new server, both are initially set to ISO 8859-1.

2. Change the **Default Character Set** to match the current operating system character set and the RDBMS character set; for example, ISO 8859-2.

If the FileNet Image Services system has been converted from an older character set, such as FileNet Image Services International, set the **Former Character Set** appropriately. If the system has never been converted, set the **Former Character Set** to match the **Default Character Set**. Refer to the *IBM FileNet Image Services System Administrator's Handbook* for setting the supported language preference for the operating system, databases, and the FileNet Image Services software.

Modify dataset file sizes

You can modify the logical volumes to match volume data determined by the *IBM Capacity Planning Tool*.

Click the **Datasets** tab from the main edit menu to view a list of the data sets added by default. All of the data set sizes are set by default by the system. If you want to change any of them, change them in their respective File Size (MB) spreadsheet cells.

See the volume data determined by the *IBM Capacity Planning Tool*, to create your logical volume. Your data set sizes must match the sizes recorded in that table.

- "Create logical volumes for Image Services data sets" on page 19

When creating larger data sets, note the following:

- The sizes of all of the data sets can be changed in this **Datasets** tab in the **Dataset Size** column.
- Maximum and minimum sizes in number of megabytes is checked by the Editor program.
- Minimum size for security datasets is 64 MB.
- Maximum size is 16 GB for dataset caches.
- If you need a larger cache, run the **Add Additional Dataset** procedure under the **Procedures** tab.
- You can have a total of 255 dataset volumes, each 16 GB in size. Supporting 255 cache dataset volumes, each 16 GB in size, allows for terabyte caches. The maximum cache size is 4080GB, or 4 terabytes.

Configure logical cache (optional)

Use the System Configuration editor to modify the minimum or maximum allocation for each cache configured.

Procedure

To configure the logical cache:

1. Click on the **Server Application Services** tab in the System Configuration Editor window.
2. Select the **Cache** subtab to view a list of caches configured on your server. Default values are automatically given to each of the caches.
3. To modify the minimum or maximum allocation for each cache configured, click on the white box below the minimum or maximum column of each cache allocation you want to change, and enter the new value into the field.
4. The **Locked**, **Daemon**, and **Write Threshold (%)** values are set to default values. Leave these values set to their defaults.

The following subtabs in the **Server Application Services** tab do not need to be configured unless you want to assign non-default values to the application parameters:

- **Scheduling**: sets up station document services parameters.
- **Cache Duration**: sets up the prefetch, migrate, and refresh duration for the System Cache.
- **Batch**: sets up station batch services parameters.

Configure system Document Services parameters (optional)

Use the **System Application Services** tab in fn_edit to configure the system Document Services parameters.

Procedure

To configure the Document Services parameters:

1. Click the **System Application Services** tab in the System Configuration Editor window.
2. Select the **Document Services** subtab to change the values of any of the document services parameters. Document and surface id ranges can be changed from this menu.

   Consult Help text regarding the parameter options.
3. To change the way images are sent to the optical disk, select the **Others** subtab.

   These parameters are set to default values by the software. To change any of these parameters, click on the field of each parameter you want to change, and type the new value.

Modify the System and Server Parameters (Optional)

This procedure modifies the system processes parameters (for example, ds_notify, rmt_commit).

Procedure

1. Select the **Performance Tuning** tab in the System Configuration Editor window.
2. To modify the system processes parameters (for example, ds_notify, rmt_commit, and so on), click on the **System Processes** subtab and type the new values in the fields of the system processes you want to change.

   Consult the Help regarding the parameter options.
3. To modify the server processes parameters (for example, bes_commit, dtp, and so on), click on the **Server Processes** subtab and type in the new values in the fields of the system processes you want to change.
4. To modify other specific server processes parameters (for example, Document Buffer Count, Document Buffer Size, and so on), click on the **Server Memory** subtab. These parameters should be left at their default values unless changes are necessary.

Configure MKF database parameters

Configure the MKF database parameters on servers that have an MKF database.

Procedure

To configure the MKF database parameters:

1. Select the MKF Databases tab in the System Configuration Editor window.

2. The MKF database parameters are set to default values by the software. These parameters should be left at their default values.

   Important: The security database **SEC_db** and redo log **SEC_rlmust use 8 KB blocks**.

   Tip: The default MKF database block size is **8 KB**. You can also choose a block size of 16 KB. Click Help if you have any questions about the parameter values.

Configure network parameters

After you have installed and configured the network protocol on the Root/Index server, configure the network parameters for IBM FileNet Image Services in fn_edit.

Procedure

To configure the network parameters:
1. In the System Configuration Editor window, select the **Network Addresses** tab.
2. Enter the Network Name. The Network Name is the DNS host name of the server. The name must be unique, less than 256 characters, and composed of alpha, digits, dot, dash, underline characters only (No Spaces).

   If you enter a Network Name, you do not need to enter a Network Address, unless the server is multi-homed. In dual and multi-server systems, the FileNet Image Services installation program only populates the Network Name field on the Root/Index server. On all other servers, such as storage library and application servers, you must enter the Network Name in this field manually.
3. Enter Network Addresses. For Multi-Homing support, you can enter up to eight IPv4 network addresses, one for each network adapter in the server. Each field displays the four-part IPv4 address for the corresponding server name. You can add or modify network addresses in any of these fields.

   Important: If your FileNet Image Services system uses IPv6 network addresses, leave the Network Address fields blank, and enter only the network name in the Network Name field.

   An IPv4 address is a four part decimal number. Each part must be between 0 and 255 and is separated by a period. For example:

   `192.0.2.24`

Results

After the FileNet Image Services software restarts, the fn_build tool determines if any changes have occurred in the fn_edit configuration.

Exit the System Configuration Editor

Save your settings and exit the configuration editor.

Procedure

1. From the FileNet Image Services - System Configuration Editor window, select the **File** menu and click **Exit**.
2. Click **Yes** to save the configuration and exit the System Configuration Editor.

Modify the /etc/vold.conf file

The Images Services software does not expect any other software to communicate with the optical drives attached to the system which might cause interference. To prevent this possible interference, edit the /etc/vold.conf file, if one exists.

About this task

Perform the steps in this section on **all servers** running volume management software (for example, VERITAS Volume Manager). If the server is not running volume management software, then skip to "Build and initialize the root server."

Procedure

To modify the /etc/vold.conf file:

1. Use your preferred text editor, such as vi, to edit the vold.conf file in the /etc directory:

   ```
   vi /etc/vold.conf
   ```

2. If you find statements in the file that look similar to the rmdisk line, place a pound sign in front of them, so they will be turned off:

   ```
   #ident  "@(#)vold.conf 1.26  00/07/17 SMI"
   #
   #Volume Daemon Configuration file
   .
   .
   #Devices to use
   use cdrom drive /dev/rdsk/c*s2 dev_cdrom.so cdrom%d
   use floppy drive /dev/rdiskette[0-9]dev_floppy.so flopp
   #use rmdisk drive /dev/rdsk/c*s2 dev_rmdsk.so rmdsk%d
   ```

3. Close the file and save the changes.

4. To make these changes go into affect, enter the following commands depending upon your version of Solaris:

   - On Solaris 9 systems, enter the following commands:

     ```
     ps -ef | grep vold (to get the process id  of the vold process)
     kill -HUP process_id
     ps -ef | grep vold (to get the process id  of the vold process)
     ```

     These commands kill and restart the vold process. When it restarts, it reads the edited vold.conf file.

   - On Solaris 10 systems, enter the following commands:

     ```
     svcadm disable volfs
     svcadm enable volfs
     ```

     This disables and reenables the vold process. When the vold process is re-enabled, the edited vold.conf file is used.

Build and initialize the root server

Build and initialize the RDBMS on the root server.

Perform the steps in this section on these servers:
- Root/index server during a dual server installation.
- Root/index/storage library server during a combined server or entry server installation.

Initialize the RDBMS on the root server

Initialize Oracle and DB2 software on the root server.

Skip to the appropriate subsection:
- "On servers with DB2 Client software"
- "On servers with Oracle software"

On servers with DB2 Client software

Verify the DB2 instances. Before initializing the FileNet Image Services databases, ask the Database Administrator to start both local and remote DB2 instances

Procedure

To verify the DB2 variables:

1. Ask the Database Administrator to start the RDBMS software before you initialize the FileNet Image Services databases.
2. Connect to the remote DB2 database. As the instance owner defined in "Gathering DB2 database information" on page 30, enter the following command:

   ```
   $db2 connect to dbname user f_sw
   ```

   Enter the f_sw password to connect to the database.
3. Verify that the DB2 Home and Instance environment variables are set appropriately for both root and the FileNet Image Services software user, such as fnsw.

   ```
   DB2_HOME   (set to the sqllib directory within the DB2 Instance owner's
   DB2_INST   (set to the name of the DB2 instance owner, such as fnsw)
              DB2 home directory, such as /home/fnsw/sqllib).
   ```
4. As each user, enter the following commands:

   ```
   echo  $DB2_HOME
   echo  $DB2_INST
   ```
5. Compare the output of the previous commands to the settings determined in the *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software*. To download this document from the IBM support page, see "ibm.com and related resources" on page v.
6. If the *DB2_HOME* and the *DB2_INST* variables are not set correctly, return to "Install the user environment templates" on page 41 and run the inst_templates command again.

On servers with Oracle software

Verify the Oracle variables. Before initializing the FileNet Image Services databases, ask the Database Administrator to start both local and remote Oracle instances.

Procedure

To verify the Oracle variables:

1. The following Oracle variables must match the existing Oracle instance:

   ```
   ORACLE_HOME (set for instance)
   ORACLE_SID  (set for System ID)
   ORACLE_UID  (set for Oracle database administrator user)
   TWO_TASK    (set if Oracle database is on a remote Oracle server)
   ```
2. As each user, enter the following commands:

```
echo  $ORACLE_HOME
echo  $ORACLE_SID
echo  $ORACLE_UID
echo  $TWO_TASK
```

3. Compare the output of the previous commands to the setting determined in "Oracle 10g and Oracle 11g" on page 29 If the *ORACLE_SID* and the *ORACLE_HOME* variables are not set correctly, see the Database Administrator for the system to have the settings changed.

   Important: In addition, the Database Administrator must create the default table spaces with the names you entered in the FileNet Image Services System Configuration Editor. See the Table space table in "Oracle 10g and Oracle 11g" on page 29 for this information. If the Oracle software is not running and if the new table spaces have not been created, the initialization process will fail.

4. On FileNet Image Services systems with remote Oracle databases:

   Important: Verify with the Database Administrator that the Oracle Client software has been successfully installed on the FileNet Image Services server.

   a. As the FileNet Image Services software user, such as fnsw, run the following command on the FileNet Image Services server:

      `fn_oracle setquotas`

      This command creates the `/fnsw/local/oracle/ora_users.sql` file.

   b. Copy the following scripts from the FileNet Image Services server to the corresponding directories on the Oracle server:

      ```
      /fnsw/oracle/FileNet.sql
      /fnsw/local/oracle/ora_users.sql
      ```

   c. Ask the Database Administrator to run these scripts on the remote Oracle server:

      ```
      SQL>@FileNet.sql (grants privileges toFileNet Image
      Services users)
      SQL>@ora_users.sql (assigns quotas, default tablespaces, and temporary tablespaces)
      ```

Set up links required for FileNet Image Services MKF data sets that use file systems

The standard location for the IBM FileNet Image Services MKF databases is the `/fnsw/dev/1/` directory. To prevent performance issues, you might choose to keep some or all of the MKF databases in other locations. The mkf_fs_link.sh script creates zero-byte files and symbolic links to them. The input to this script is the `mkf_fs_links_input.txt` file that you can customize. If your MKF data sets are stored in raw partitions, skip this section.

About this task

Repeat the steps in this section on these servers for the FileNet Image Services groups and users:

- Root/index/storage library server during a combined server or entry server installation
- Root/index and storage library server during a dual server installation
- Application server during an application server installation.

Procedure

To create the symbolic links:

1. As as the FileNet Image Services software user, locate the template file, `mkf_fs_links_input.txt` file, in the `/fnsw/etc/` directory.
2. Use your preferred text editor to modify this file with the locations of your MKF databases.

   Tip: List the contents of the `/fnsw/dev/1` directory on each server to see the current MKF database links for comparison.
3. Update the file system location column of the template. For example, on a Solaris combined server, you might update the template to look like the following example.

   ```
   #dataset names        file system location
   #--------------       ---------------------
   cache0                /dev/vx/rdsk/fndg
   permanent_db0         /dev/vx/rdsk/fndg
   permanent_rl0         /dev/vx/rdsk/fndg
   transient_db0         /dev/vx/rdsk/fndg
   transient_rl0         /dev/vx/rdsk/fndg
   sec_db0               /dev/vx/rdsk/fndg
   sec_rl0               /dev/vx/rdsk/fndg
   ```
4. Run the mkf_fs_link.sh script to create a zero-byte file for each of the MKF databases and to create the symbolic links to those files in the `/fnsw/dev/1/` directory.

   `/fnsw/etc/mkf_fs_link.sh`
5.
6. Examine the contents of the `/fnsw/dev/1` directory by entering the following command:

   `ls -lL`

   The `-l` option displays the mode, number of links, owner, group, size (in bytes), and time of last modification for each file. The `L` option displays the file or directory referenced by a symbolic link.

   The directory must contain the linked directories specified in the `mkf_fs_links_input.txt` file. If the `/fnsw/dev/1` directory does not contain the correct links, verify and, if necessary, update the `mkf_fs_links_input.txt` file with any changes, verify the permissions on the mkf_fs_link.sh script, and run the script again.
7. When the links are set correctly, skip to the section, "Initialize all databases"

Initialize all databases

Create the relational database users and provide other information to initialize the databases.

Procedure

1. As the FileNet Image Services software user, such as fnsw, enter the following command to create the relational database users (standard names, f_sw, f_sqi, f_maint, f_open):

   `fn_setup_rdb -f`

   Follow the prompts to enter the requested information for your relational database. You are prompted for the passwords for the database users and you can consult the Installation Worksheet you completed earlier for your operating system.
2. Initialize all datasets that are configured on your server by entering the following command:

```
fn_util init -y
```

This command could take about 10 or 15 minutes to complete, so wait for the system prompt to return before continuing.

3. Check the /fnsw/local/logs/fn_util/fn_util.log file after the fn_util init command is complete. If you see any of the following Oracle messages, you can ignore them:

```
ORA-00942: table or view does not exist.
ORA-01432: public synonym to be dropped does not exist.
ORA-01434: private synonym to be dropped does not exist.
ORA-01919: role 'EXP_FULL_DATABASE' does not exist.
ORA-01919: role 'IMP_FULL_DATABASE' does not exist.
```

These warning messages might result from the system trying to remove RDBMS tables when they have already been removed.

The message MKF irrecoverable read error might appear in the fn_util.log file. Due to the current state of the system, you can ignore this message.

Complete the configuration

Follow these procedures to complete the installation on Solaris servers.

Bring up the FileNet Image Services software

Start the IBM FileNet Image Services software after first verifying you Oracle SID settings and then running the necessary commands.

Before you begin

For remote Oracle databases: If the Oracle database is located on a remote server, verify the Oracle instance is running.

Procedure

1. For remote Oracle databases: If the Oracle database is located on a remote server, verify the Oracle instance is running.

2. For local Oracle databases: If the Oracle database is located on this server, verify that the Oracle Instance has the correct SID. As a user with **root** privileges, enter:

```
ps -ef | grep -i ora
```

The output is similar to the following example in which the SID appears at the end of process name. In this example, the SID is IDB.

```
<oracle user>  1127    1  0  Mar 11  ?          0:18 ora_pmon_IDB
<oracle user>  1129    1  0  Mar 11  ?          0:34 ora_dbwr_IDB
<oracle user>  1131    1  0  Mar 11  ?          0:18 ora_lgwr_IDB
<oracle user>  1133    1  0  Mar 11  ?          0:01 ora_smon_IDB
```

3. Verify that the Oracle SID is set appropriately for both **root** and **fnsw** users. As each user enter the following command to see how they are set:

```
echo $ORACLE_SID
```

Compare the output of the above command to the setting determined in "Oracle 10g and Oracle 11g" on page 29. If it is not set correctly, check with the System Database Administrator to have it reset.

Important: The Database Administrator must start the RDBMS software before attempting to start the FileNet Image Services software for the first time. If the Oracle or DB2 software is not available when the FileNet Image

Services software starts, the FileNet Image Services software will fail and display error messages. If you receive error messages, start the RDBMS software and restart the FileNet Image Services software.

4. From the command line prompt, log on as the FileNet Image Services software user, such as **fnsw**, and enter the following command to bring up the FileNet Image Services software:

   `initfnsw start`

5. Start the updated FileNet Image Services application software by entering:

   `Xtaskman &`

6. After the **TM_daemon** message displays in the Process table, select the Monitor menu.

7. From the Monitor menu, select the Event Logs option.

8. From the Event Logs window, select the DISPLAY menu, and select Dynamic. (The Dynamic option enables screen refreshes each time the messages are logged.) Return to the FileNet Image Services Task Manager window, but do not close the Event Logs window.

9. From the FileNet Image Services Task Manager window, select **START**.

   You will receive system messages in the Current Status window as the FileNet Image Services software starts. After the FileNet Image Services software startup process finishes, the CLOSE button is highlighted.

10. Select the **CLOSE** button. (The Current Status window closes.)

11. Review the contents of the Event Log window to verify that there are no error messages from the software startup.

Configure TTY Ports (optional)

About this task

Perform the steps in this section on all server. If your site has already configured a tty port for the modem or the optical disk device used for FileNet Image Services, skip this section. If you are using a FileNet Image Services OSAR (64, 90, 96, and so on), use the admintool (Solaris 9) or the SMC (Solaris 10) to configure a tty port for a modem or for the optical disk device arm.

Important: If you are using a multi-port serial/parallel adapter in your server, insure that the adapter is configured for RS232 protocol. In addition, OSAR arms and modems must address serial ports ttyy00 through ttyy07.

Configure the Optical Device Port on Solaris 9

Procedure

To configure the optical device port:

1. Logon as a user with root privileges.

2. In X Windows, open a new window and enter the following command:

   `admintool &`

3. From the Admintool window, select the **Browse** menu option, then select **Serial Ports**.

4. Select the tty port number you want to use (a or b).

5. Select **Edit**.

6. Select **Modify**. (The Admintool: Modify Serial Port window displays.)

7. From the Admintool: Modify Serial Port window, select **Template**. (A pull-down list displays.)

8. From the pull-down list, select **Dial-out only**.

9. In the Detail section, select **Expert**.

10. In the Options section, select **Software Carrier**.

11. Click **Apply** to configure the port.

12. Click **OK**.

Configure the Optical Device Port on Solaris 10

Procedure

1. Logon as a user with root privileges.

2. In X Windows, open a new window and enter the following command:

   smc &

   The main SMC screen displays.

3. From the main SMC window, expand This Computer, then expand Devices and Hardware.

4. From the SMC window, select **Serial Ports**.

5. In the right pane, select the tty port name you want to use (a or b) and right-click on that port name.

6. Select **Configure and choose the Modem (Dial Out) template** from the list of choices.

7. Click **OK** to close the dialog.

8. Right-click the tty port name again and select **Properties**.

9. Select the Advanced tab and at the Carrier Detection: option click the **Software** radio button.

10. Click **OK** to close the dialog.

Verify storage library device drivers on a combined server

There are several commands you must run on your IBM FileNet Image Services Combined server to verify your server's storage library device drivers in preparation of installing optical libraries.

About this task

Server Types Perform the steps in this section on the **Root/Index/Storage Library** - (Combined server or Entry server installation)

If you are configuring a Root/Index server, skip to the section, "Modify the /etc/inittab file on the root server" on page 61.

If you are configuring a cache-only or MSAR system (no optical devices attached to the Storage Library server), skip to the section, "Configure storage library devices on the combined server" on page 60.

Note: Optical libraries are NOT supported in a Solaris Zones environment.

Connect optical storage library devices

Procedure

To connect the optical storage library devices:

1. Logoff the system and power off your server.
2. Connect the optical storage device to the appropriate SCSI port on your server.
3. Power on the optical storage device. (If necessary, wait for the optical device to enter the ready state before continuing with the next step.)
4. If you are on an AIX or Solaris system and plan to install optical libraries, complete this step. The FileNet Image Services installation program cannot install a new fnsod (FileNet Image Services SCSI Optical Device) driver automatically, so you must install it manually. As a user with root privileges, enter:

   ```
   fnsod.install /fnsw/bin/fnsod
   ```

   The new driver goes into affect after you restart the server in the next step.
5. At the system prompt, enter the following command:

   ```
   restart -- -r
   ```

   All optical devices that are currently connected must be configured automatically after the system restarts.
6. After the station finishes starting, log on as a user with root privileges.
7. Verify that all devices are configured properly. List the currently installed optical device drivers by entering the following command:

   ```
   ls  /dev/fnsod*
   ```

   You must receive output similar to the following:

   ```
   /dev/fnsod.0,2,5,0
   /dev/fnsod.0,2,6,0
   ```

Verify optical storage library devices

To view the information concerning the optical library devices configured on your server, select the Storage Libraries tab from the FileNet System Configuration Editor window.

Tip: If you select the **Manually configure optical library** option from the **Procedure** list, then consult your Help Text to configure the optical library. The id format for both the optical library arm and drive devices must be:

<#> <#> <#> <#> for example: 1 2 3 4 where:

The first number is the SCSI adapter id

The second number is the bus id

The third number is the device id

The fourth number is the LU#

Use the probe-scsi-all tool to retrieve the scsi parameter output for the optical devices connected to your system. (If you have an HP 600FX connected to your server, DO NOT use the probe-scsi-all command. The command will cause errors, if the device is configured in multi-LUN mode.)

See the Installation worksheet for your operating system for information concerning your optical library devices.

Configure storage library devices on the combined server

Using the FileNet System Configuration Editor (fn_edit), run the procedure to configure your storage library on your IBM FileNet Image Services Combined server.

About this task

Note: If there are no physical storage libraries attached to the server (as in an MSAR or cache-only system), skip to the next section, "Modify the /etc/inittab file on the root server" on page 61.

Tip: Even though an ODU (Optical Disk Unit) is technically not a storage library because it lacks a robotic arm, for the purposes of configuration be sure to perform the same steps for an ODU that you would perform for a storage library.

Procedure

1. As the FileNet Image Services software user such as **fnsw**, start the FileNet Image Services Configuration Editor by entering:

   ```
   fn_edit  &
   ```
2. Verify that the domain names are correct, and click **OK**. (The two-part domain name is structured as follows:&ltDomain&gt:<Organization>.)
3. From the Procedures tab in the FileNet Image Services System Configuration Editor window, locate and select the Automatically configure storage library procedure from the list of available procedures.
4. Select **Run**.
5. Check the Storage Libraries tab to verify that the correct Storage Library devices were configured.

Manually configure an optical disk unit (ODU)

Using the FileNet System Configuration Editor (fn_edit), manually configure an optical disk unit and rebuild the system configuration files.

About this task

In this task you will manually configure an optical disk unit, exit the configuration editor and rebuild the system configuration files.

Procedure

1. Select the Procedures tab from the FileNet Image Services System Configuration Editor window.
2. Select the Manually configure storage library option from the procedures list. Click **Run**. (A new dialog box displays.)
3. From the new dialog box, locate and highlight the HP Optical Drive Unit option. Click **OK**.
4. Respond to the prompts as appropriate for your system, and supply the following details:
   - Library type
   - Library number
   - Number of optical drives in the library

- Types of optical drives in the library
- Position of the optical drives in the library
- SCSI address of each optical drive and the library's robotic arm

5. Exit the Configuration Editor and save your changes.
6. To put your changes into effect, stop the FileNet Image Services software and rebuild the system files by entering the following commands as a user with **root** privileges:

```
killfnsw - DAy
fn_build -a
```

Modify the /etc/inittab file on the root server

You can edit the inittab file to have the IBM FileNet Image Services software start automatically when the server is restarted.

About this task

If the relational database is not available when the FileNet Image Services software starts, the FileNet Image Services software generates error messages. If you receive error messages of this type, start the DB2 or Oracle software, and then restart the FileNet Image Services software. If you do not know whether relational database software will be started when the FileNet Image Services software starts, do not uncomment the line in the inittab file.

Procedure

To modify the inittab file:

1. Log on as a user with root privileges and change to the /etc directory by entering:

```
cd /etc
```

2. Using a preferred editor (for example, vi), open and edit the inittab file.

   Important: If this command is re-enabled, the Database Administrator must ensure that the DB2 or Oracle software is running before the FileNet Image Services software restarts.

3. Locate and re-enable the following line by removing the comment character:

```
: fn:3wait:/bin/sh /etc/rc.initfnsw  </dev/console>/dev/console>&1
```

4. Save the file and then exit. This completes the basic configuration of your Root/Index or Combined server.

Configure BES, cross-committal, or multi-committal systems

Each of the FileNet Image Services systems in an BES configuration, Cross-Committal configuration, or a Multi-Committal System configuration is technically an independent system with a Root/Index server and is considered a peer system by all the others.

This section presents a brief description of these systems. For detailed information, see the *IBM FileNet Image Services Multi-Committal and Cross-Committal Configuration Handbook*.

To download this document from the IBM support page, see "ibm.com and related resources" on page v.

The following describe the three systems:

- A Cross-Committal System is composed of a source Image Services system and a target FileNet Image Services system. The source system commits images to the target system, but does not retain the images locally.

- A Batch Entry Server (BES) is a specific type of Cross-Committal system that has no storage library and is used only for entering images for committal to another independent system (the target) that does have a storage library. The target system is also capable of entering and committing images, so in this situation the two systems must be "compatible," that is, they must have non-overlapping document IDs and surface IDs.

- A Multi- Committal System is an independent FileNet Image Services system that contains a Storage Library server and commits images both to its own Storage Library and to the Storage Library of another independent FileNet Image Services system. Multi-Committal Systems are not required to be "compatible" systems with non-overlapping document IDs. If they are not compatible, new document IDs are assigned on the target system, which might impact performance.

Chapter 6. Complete the Installation

To complete the installation of your system, continue with the final procedures. Several of the procedures are optional and are identified as such.

Procedure

- Configuring FIPS mode - optional

  Configuring FIPS mode controls which cryptographic modules are used by your FileNet Image Services system. You can choose to configure FIPS mode at this time of the installation or later.

- Install the latest fix pack

  Install the latest fix pack that is available for this FileNet Image Services release.

- Software tuning for COLD users

  On servers that have the COLD software installed, you might need to set the DISPLAY environment variable. The instructions to do so are provided in this topic.

- Create the cor_backoff_config file - optional

  Create the cor_backoff_config file, which allows you to modify the "connection failure or retry" behavior for the Courier protocol, if your system is encountering errors or a slow network.

- Edit the `etc/inittab` file - optional

  Modify the `etc/inittab` file so that the FileNet Image Services software start automatically when the system is restarted.

- MSAR systems

  You are instructed to see the IBM support page for information about installing and configuring the Magnetic Storage and Retrieval (MSAR) storage solution.

- Single document storage systems - Install Tivoli 5.5

  You must install the Tivoli Storage Manager API Client Package on FileNet Image Services systems that use IBM DR550 storage libraries. Follow the instructions provided in this topic.

- Start the FileNet Image Services software

  Perform the steps in this topic to start the FileNet Image Services software.

- Start the Application Executive

  Perform the steps in this topic to start the FileNet Image Services Application Executive software.

Configuring FIPS mode - optional

The US Federal Information Processing Standard 140-2 (FIPS 140-2) is a validation program that defines security standards for validating cryptographic modules that encrypt user credentials (user name and password) between servers.

About this task

The cryptographic modules are certified through the National Institute of Standards and Technology (NIST). The IBM Tivoli group has built certified cryptographic libraries, which are now included with IBM FileNet Image Services.

FIPS mode controls which cryptographic modules are used by FileNet Image Services. When a FIPS-compliant mode is enabled, you can run FileNet Image Services by using NIST certified cryptographic modules.

Configuring FIPS mode on your FileNet Image Services system is optional. You can configure FIPS mode on your FileNet Image Services system now or at any time in the future. You can also turn off FIPS mode at any time. If you do not want to configure FIPS mode now, skip to the next section, "Install the latest fix pack" on page 67.

For more information about FIPS 140-2 support, see the *IBM FileNet Image Services System Administrator's Handbook*.

Procedure

To configure FIPS mode on your server:

1. If the FileNet Image Services software is running, as the FileNet Image Services software user, such as fnsw, stop it by entering:

   `initfnsw –y stop`

2. Stop all remaining FileNet Image Services processes by entering:

   `killfnsw  –DAy`

   The -D option terminates FileNet daemons (such as TM_daemon). Use this option to terminate the TM_daemon process. Normally, this process stays running across initfnsw stop cycles, but on occasion, it is necessary to terminate TM_daemon as well.

   The -A option removes all IPC segments.

   The -y option automatically answers Yes to subsequent killfnsw prompts.

   The killfnsw command also stops the IS ControlService on Windows servers.

3. Enter the following command at the system prompt:

   `convert2fips xxxx_xxxx`

   Where xxxx_xxxx is one of the following FIPS modes:

   FIPS_NONE – turn off FIPS encryption. This mode is the default.

   FIPS_PREFERRED – use FIPS encryption unless the server is communicating with a server that does not have either FIPS_PREFERRED or FIPS_ONLY encryption configured. Do not use FIPS encryption if the server is communicating with a server that does not have FIPS configure or is configured for FIPS_NONE.

   FIPS_ONLY – use only FIPS-compliant encryption. Rejects connections from other FileNet Image Services clients or servers that do not have FIPS-compliant encryption supported and configured. FIPS_ONLY mode strictly enforces the use of FIPS-compliant encryption between this server and any clients or other servers.

   Your choice is stored in the Network Clearinghouse (NCH) database.

4. Click **OK** to exit.

5. Use the Task Manager to restart FileNet Image Services.

6. Verify the current FIPS mode by entering:

   `convert2fips`

   Tip: You can determine the current FIPS mode at any time, even while FileNet Image Services is running, by entering the convert2fips command with no options.

Software tuning for COLD users

Perform the steps in this section on the server that has COLD software installed on it, usually the Storage Library server.

About this task

When the following circumstances occur, the DISPLAY environment variable, normally set by the system, might change, and there appears to be no automatic way of correctly setting this variable:

- User switches user (su -) from another login (typically root).
- User performs an rlogin from another system.
- User resets the default host from an x-station hooked to another system.

The following work around exists:

Procedure

To set the DISPLAY variable:

1. Log on as a user with root privileges. Before running COLD, you should check the value of DISPLAY. This can be done with the following UNIX command:

   ```
   echo  $DISPLAY
   ```

2. If it has a value, it will print. If it has no value, or was never set, you will either see an empty line (Bourne/Korn shell) or an error message (C shell). In that case, you must provide a value, as follows:

   - In the Bourne shell, enter:

     ```
     DISPLAY=host_identifier:0 export DISPLAY
     ```

   - In the Korn shell, enter:

     ```
     export  DISPLAY=host_identifier:0
     ```

   - In the C shell, enter:

     ```
     setenv DISPLAY host_identifier:0
     ```

     where *host_identifier* is the server identifier, either a name or IP address.

     If the DISPLAY environment variable is not set, Motif fails by displaying errors and fails. What should happen instead is that COLD should verify that DISPLAY is set, and if not, log a clear error message, then cease.

Adapt the system for Xstation use (optional)

If you plan to run Xapex from an X station, you must modify some of the system parameters.

Perform the steps in this section on these servers:

- Root/index server during a dual server installation
- Root/index/storage library server during a combined server or entry server installation)
- Application server running WorkFlo Queue Services or SQL Services or VW services.

(The modified parameters disable your access control option and allow you to run applications from an X station.) To modify the appropriate parameters, enter commands similar to the following:

```
cd  /usr/lib/X11
xset q
xset +fp  /usr/lib/X11/fonts/100dpi
xset q
```

If you plan to run Xapex on an IBM Xstation, enter the additional line: **xhost +**

These settings disable your access control option and allow you to run applications from an Xstation.

Verify Window manager selection

Perform the steps in this section on the PC workstations that log in remotely to the Solaris server.

Procedure

To verify that the Storage Administrator screens display correctly, follow these steps:

1. Click the **Start** menu, point to **Programs**, **Exceed**, and click **Xconfig**.
2. When the Xconfig window displays, double-click the **Window Mode** icon (Exceed 5.1.3) or the **Screen Definition** icon (Exceed 6.0).
3. In the resulting window, verify that the **Window Manager** selection is set to **Native**.
4. If necessary, select the correct option from the pull-down menu.

Support for PCI-X channel SCSI adapter

Some HP optical libraries have been found to have specific issues when configured on Solaris 10 using the PCI-X Dual channel Ultra320 SCSI (LVD/SE) Adapter.

This configuration works correctly on Solaris 9 and diagnostic information has been submitted to Sun service. A patch was not yet available at the time of this release, but there are work arounds for a couple of issues. For more information, see Appendix G, "Support for PCI-X dual channel Ultra320 SCSI (LVD/SE) adapter," on page 117.

Start the FileNet Image Services software

Start the IBM FileNet Image Services software on all servers and view the Event Logs window to make sure that there are no error messages from the software startup.

About this task

Perform all of the steps in this section on all servers.

Important: If RDBMS software is installed on this server, ask the Database Administrator to start it. If the relational database is on a remote server, both the remote database and the local client software must be running. If the RDBMS software is not available when the FileNet Image Services software starts, the FileNet Image Services software fails and displays error messages. If you receive FileNet Image Services error messages, start the RDBMS software and restart the FileNet Image Services software.

Procedure

To start the FileNet Image Services software:

1. As the FileNet Image Services software user such as fnsw, stop any FileNet Image Services processes that might already be running by entering the following command:

   killfnsw -DAy

2. Start the FileNet Image Services Task Manager by entering:

   Xtaskman &

3. After the TM_daemon message displays in the Process table, select the **Monitor** menu.

4. From the **Monitor** menu, select the **Event Logs** option.

5. From the Event Logs window, select the **DISPLAY** menu, and select **Dynamic**. (The **Dynamic** option enables screen refreshes each time the messages are logged.) Return to the FileNet Image Services Task Manager window, but do not close the Event Logs window.

6. From the FileNet Image Services Task Manager window, click **START**.

   System messages display in the Current Status window as the FileNet Image Services software starts. After the FileNet Image Services software startup process finishes, the **CLOSE** button is highlighted.

7. Click **CLOSE**.

8. Review the contents of the Event Logs window to make sure that there are no error messages from the software startup.

Start the Application Executive

To begin customizing your IBM FileNet Image Services system by defining media families and document classes, start the FileNet Image Services Application Executive (Xapex).

Procedure

To start the Application Executive:

1. As a FileNet Image Services software user, such as fnsw, start the Application Executive by entering:

   Xapex &

2. Log on as SysAdmin. (The default password is SysAdmin.)

   See the *IBM FileNet Image Services System Administrator's Handbook* for complete information about using the Application Executive. To download FileNet Image Services documentation, see "ibm.com and related resources" on page v.

Install the latest fix pack

Install the latest fix pack that is available for this FileNet Image Services release. The accompanying README file contains instructions for installing the fix pack software.

Install the fix pack software on all servers.

Fix packs are available for download from the IBM, see "ibm.com and related resources" on page v.

MSAR systems

On FileNet Image Services systems that use the Magnetic Storage and Retrieval (MSAR) storage solution, MSAR provides high speed and high capacity storage libraries on magnetic disk media.

For information on installing and configuring an MSAR System, see the *IBM FileNet Image Services MSAR Procedures and Guidelines* document for information.

To download this document from the IBM support page, see "ibm.com and related resources" on page v.

Single document storage systems - Install Tivoli 5.5

On FileNet Image Services systems that use IBM DR550 storage libraries, you must install the Tivoli TSM API Client Package.

The Readme files that accompany the software contain the installation instructions for each operating system and a link to the *IBM Tivoli Storage Manager Backup-Archive Clients Installation and User's Guide*.

`ftp://ftp.software.ibm.com/storage/tivoli-storage-management/maintenance/client/v5r5/`

For information on installing and configuring Single Document Storage devices, see the *IBM FileNet Image Services Integral Single Document Storage and Retrieval Procedures and Guidelines* for information.

To download this document from the IBM support page, see "ibm.com and related resources" on page v.

Begin production mode

This concludes the FileNet Image Services Installation and Configuration Procedures. The FileNet Image Services system is now ready to put into production.

Appendix A. Adding an application server

Use the procedures in this appendix to guide you through the process of adding an Application server to your IBM FileNet Image Services system.

Complete all of the steps in this appendix on the Application server unless stated otherwise. In addition to installing and configuring a new Application server, use this appendix to accomplish the following steps.

- Add services to an existing server (for example, adding Batch Entry Services to an existing Application server). See the section, "Add server services" on page 72.
- Reconfigure an existing server because the functions it currently performs are no longer required. (Reconfiguring an existing server must be handled the same as installing and configuring a new Application server.)

Installation Prerequisites

Verify that the server is ready for the software installation by completing the procedures on the System Administrator Tasks checklist for your operating system.

This chapter assumes that the IBM FileNet Image Services 4.2 and the Relational Database software have already been installed and configured on a Combined or Dual server system. The Combined or Root/Index server will be the Root server for the Application server. If a Root server has not already been established, follow the procedures in this manual for installing and configuring the Root server, then return to this appendix to set up the Application server.

Verify that the server is ready for the software installation by completing the procedures on the System Administrator Tasks checklist in the section, Chapter 2, "System Administrator tasks - Solaris," on page 7

Transfer all of the requested information to the appropriate sections on the Installation Worksheet. All of the information necessary to complete the FileNet Image Services installation on the Application server will be in one easy-to-find place.

When the server is ready, you can begin installing the necessary software:

- If you are configuring an Application server with only Batch, Print, and/or Cache Services, which do not require RDBMS software, skip to "Install FileNet Image Services software" on page 70.
- If the DB2 or Oracle relational database software is already installed, you can also skip to "Install FileNet Image Services software" on page 70.
- If you are configuring an Application server with either WorkFlo Queue Services, SQL Services, or VWServices, continue with the next section to install the relational database software.

Install relational database software (if applicable)

Perform the steps in this section only on an Application server with either WorkFlo Queue Services, SQL Services, or VWServices.

IBM DB2

Install the IBM DB2 software.

For guidelines on installing the DB2 RDBMS software on the Application server, see the *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software*. To download the guidelines from the IBM support page, see "ibm.com and related resources" on page v.

Oracle 10g and Oracle 11g

Install the Oracle software on the Application server.

For guidelines on installing Oracle software on the Application server, see:

- *IBM FileNet Image Services Guidelines for Installing and Updating Site-Controlled Oracle Software on UNIX Servers*

To download the guidelines from the IBM support page, see "ibm.com and related resources" on page v.

Install FileNet Image Services software

Install IBM FileNet Image Services on the Application server.

Procedure

Install the FileNet Image Services 4.2 software on the Application server by completing the procedures in the section, Chapter 4, "Installing FileNet Image Services software," on page 33.

Configuring the Root server

Modify the configuration database on the Root server to allow for the presence of an Application server on your system.

Procedure

To configure the Root server:

1. Perform the steps in this section and its sub-sections on these servers: Root/Index server during a Dual server installation and Root/Index/Storage Library server during a Combined server installation
2. Modify the configuration database on the Root server to allow for the presence of an Application server on your system.

Select and configure the relational database instance (if applicable)

You need to install and configure the RDBMS instance for your particular relational database type before you initialize the IBM FileNet Image Services databases.

Before you begin

This procedure assumes that the tablespaces and databases that you specify in the System Configuration Editor either already exist or that you will create them before you initialize the FileNet Image Services databases.

- For **DB2**, see the *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software*.
- For **Oracle**, see the *IBM FileNet Image Services Guidelines for Installing and Updating Site-Controlled Oracle Software on UNIX Servers*

To download the guidelines from the IBM support page, see "ibm.com and related resources" on page v. The Database Administrator might have supplied this information in the section, Chapter 3, "Installing the relational database software," on page 29.

About this task

Continue with the appropriate sub-section:
- "Select and configure DB2"
- "Oracle10g release 2 and 11g release 1" on page 72

Select and configure DB2
Verify the database and user tablespace names for DB2 V8.x and V9.x.

Procedure

To select and configure DB2:
1. Click the **Relational Databases** tab, then click the **RDB Objects** subtab.
2. On the **RDB Objects** subtab, verify the database name and the tablespace name in the Location column:
    - Database name, such as indexdb
    - User Tablespace name, such as userspace1.
3. On the **DB2** subtab, verify the following fields:
    - **Version** - must be 8.1.16 or later (DB2 version 8.1.0 plus FixPak 16 or later) or 8.2.9 or later (DB2 version 8.2.0 plus FixPak 9 or later) or 9.5 or later (DB2 version 9.5.0 or 9.5.0 plus FixPak 1 or later).
    - **Password Expiration Policy** - This field lists the number of days that the f_sw, f_maint, f_sqi, and f_open passwords remain in effect before they expire. The default value is 60 days. To change the default, enter a new value in this field.

      A blank field is not permitted, and a value of 0 equals `Never Expires`.
    - **Notify Administrator** - This field lists the number of days before password expiration that the administrator will be reminded to update the password. The default value is 14 days before the password expires. To change the default, enter a new value in this field.

      This value must always be less than or equal to the password expiration value. A blank field is not permitted, and a value of 0 would mean notification on the day the password expires.
4. Skip to the section, Add Server Services.

What to do next

Add Server Services.

Oracle10g release 2 and 11g release 1

Change the default Oracle tablespace names to match the tablespace names that the Database Administrator created when the Oracle software was installed. Also, verify that the version of Oracle is compatible with this release of FileNet Image Services.

Procedure

To change the default tablespace names and verify the Oracle version:

1. Click the Relational Databases tab, then click the RDB Objects subtab.
2. In the Location column of the RDB Objects window, click on a cell and replace the default FileNet tablespace names with your site-specific table names. While replacing the tablespace names, use the following criteria:
   - Change all occurrences of fnsys_ts to the name of your dedicated FileNet default tablespace.
   - Change all occurrences of fntmp_ts to the name of your dedicated FileNet temporary tablespace.
   - If an optional fnusr_ts was created for WorkFlo Queue Services, change all occurrences of the name to your dedicated FileNet user tablespace.
   - If an optional fnidx_ts was created for indexes, change all occurrences of the name of your dedicated FileNet index tablespace.

   The Image Services software will use the tablespace names entered in the RDB Objects subtab.

   Important: The tablespace names specified in the RDB Objects list must exist before you initialize the FileNet Image Services databases.
3. On the Oracle subtab, verify that the Version is 10.2.0.3, 10.2.0.3 or 11g R1 or later.

Add server services

Add the services you want to use on the Application server.

Procedure

To add services to an Application server:

1. Configure all Application server services on the Root server.
   - Batch Entry Services
   - Print Services
   - Cache Services
   - Structured Query Language (SQL) Services
   - WorkFlo Queue Services (WQS)
   - VWServices
2. If you plan to add VWServices to this Application server, use the procedures in the appendix to install and configure the FileNet Image Services and RDBMS software, and configure a SQL Service on this Application server. After you complete those procedures, see the installation handbook for your IBM FileNet Process Engine for instructions on adding VWServices to the server.

Add batch entry services

Use the **Add a Service to a Server** procedure to add batch entry services to an IBM FileNet Image Services Application server.

Procedure

To add batch entry services:

1. On the **Procedures** tab, select the **Add a Service to a Server** procedure, and click **Run**.
2. From the list of available servers, choose your Application server.
3. From the list of available services, choose **Batch Entry Services**.
4. Enter the dataset path for the FileNet Image Services cache on your Application server.

   For example: `/fnsw/dev/1/cache_0`

   Tip: The path must be on the Application server, NOT the root/index server.
5. Enter the size of the cache. (The default is 100 MB.)
6. Enter the transient dataset paths on your Application server.
   - The default transient dataset path is `/fnsw/dev/1/transient_db0`.
   - The default transient redolog dataset path is `/fnsw/dev/1/transient_rl0`.
7. Enter the size of the transient dataset sizes. The defaults are as follows: transient_db0 -3 20 MB and transient_rl0 - 256 MB.
8. Click **yes** or **no** to the `Do you want to use fast batch committal?` prompt. (If you select yes, default settings are automatically entered into the system. You can change the settings later if necessary.)

   If fast batch committal is configured, you cannot use cluster indexes. See the *IBM FileNet Image Services System Administrator's Handbook* for more details on fast batch committal and clustering. The maximum document size for remote committals using fast batch is 2.1 GB. See the *IBM FileNet Image Services Multi-Committal and Cross-Committal Configuration Handbook* for more information on remote committal. To download these handbooks, see "ibm.com and related resources" on page v.
9. Enter the number of BES commitment processes. Choose 2 (the default) or 4.
10. To add more services, continue to the next appropriate procedure below. If this is the last service you are adding to the Application server, skip to the section, "Exit the configuration editor" on page 76.

Add print services and printers

Use the **Add a Service to a Server** procedure to add print services and a printer to IBM FileNet Image Services.

Procedure

To add print services and printers:

1. On the **Procedures** tab, select the **Add a Service to a Server** procedure, and click **Run**.
2. From the list of available servers, choose your Application server.
3. From the list of available services, choose **Print Services**.
4. Click **Yes** to add Print Services. (When you select Yes, default settings are automatically entered into the system. You can change the settings later, if necessary.)
5. On the **Procedures** tab, select the **Add a printer** procedure, and click **Run**. A dialog box prompts you to select your printer from a list of supported printers.
6. Click **Yes** if this printer is your default printer.

7. Enter a printer name. Click **OK**. (The printer name can be user-defined.)

8. Enter the Network Clearing House (NCH) Printer name (for example, LJ5SiMX).

9. Enter the network address for the printer (for example, 192.0.2.6).

10. Select the printer paper size.

11. Select the printer Eject Tray (default: Default)

12. Add other printers as necessary by repeating steps 5 through 12.

13. To add more services, continue to the next appropriate procedure. If this service is the last one you are adding to the Application server, skip to the section, "Exit the configuration editor" on page 76.

Add cache services

Use the **Add a Service to a Server** procedure to add cache services to an IBM FileNet Image Services Application server.

Before you begin

If you have already added Batch Entry services, and have set up the appropriate default caches for Cache Services (as well as Batch Entry services), you DO NOT need to complete this section. You have already configured Cache Services.

Procedure

To add cache services:

1. On the **Procedures** tab, select the **Add a Service to a Server** procedure, and click **Run**.

2. From the list of available servers, choose your Application server.

3. From the list of available services, choose **Cache Services**.

4. Answer the remaining prompts appropriately.

5. Click **OK**.

6. To add more services, continue to the next appropriate procedure below. If this is the last service you are adding to the Application server, skip to the section, "Exit the configuration editor" on page 76.

Add Structured Query Language (SQL) services

Use the **Add a Service to a Server** procedure to add SQL services to an IBM FileNet Image Services Application server.

Before you begin

If you add SQL services to your system, you MUST install RDBMS software on the Application server or on a remote RDBMS server.

Procedure

To add SQL services:

1. On the **Procedures** tab, select the **Add a Service to a Server** procedure, and click **Run**.

2. From the list of available servers, choose your Application server.

3. From the list of available services, choose **SQL Services**.

Tip: If RDBMS passwords have already been set using the **Add WorkFlo Queue Service** procedure, prompts for Step 4 and Step 5 will not be appear. In this case, skip to Step 6.

4. For Oracle, go to the **RDB Object** tab and verify that the correct table space names associated with the Application server are shown. This information was supplied by the DBA earlier in this procedure.

5. For DB2 servers, answer the following prompts:
   - f_sw password
   - f_maint password
   - f_sqi password
   - DB2 Database Alias Name
   - User Tablespace Location

6. To add more services, continue to the next appropriate procedure below. If this service is the last one you are adding to the Application server, skip to the section, "Exit the configuration editor" on page 76.

Add Workflo Queue Services (WQS)

Use the **Add a Service to a Server** procedure to add Workflo Queue services to an IBM FileNet Image Services Application server.

Before you begin

If you add WorkFlo Queue Services to your system, you MUST install RDBMS software on the Application server, or on a site-controlled remote RDBMS server.

Procedure

To add WQS services:

1. On the **Procedures** tab, select the **Add a Service to a Server** procedure, and click **Run**.

2. From the list of available servers, choose your Application server.

3. From the list of available services, choose **Add WorkFlo Queue Service**. If RDBMS passwords have already been set using the "Add Structured Query Language (SQL) services" on page 74 procedure, prompts for Step 4 and Step 5 will not be appear. In this case, skip to Step 6.

4. For Oracle, go to the **RDB Object** tab and verify that the correct table space name associated with the Application server appear.

5. For DB2 servers, complete the following when prompted:
   - f_sw password
   - f_maint password
   - f_sqi password
   - DB2 Database Alias Name
   - User Tablespace Location

6. To add more services, continue to the next appropriate procedure below. If this is the last service you are adding to the Application server, skip to the section, "Exit the configuration editor" on page 76.

Add Visual WorkFlo (VWServices)

See the installation handbook for your Process Engine system for instructions about adding VWServices to the server.

Add a tape drive (optional)

Use the **Add a Tape Drive** procedure to add a tape drive to an IBM FileNet Image Services Application server.

Procedure

To add a tape drive:

1. Click on the **Tape Drives** tab in the System Configuration Editor window.
2. If no tape drive is shown in the **Tape Drives** tab, click the **Procedures** tab and select the procedure to **Add a Tape Drive**.
3. Select the **Tape Drives** tab to verify that it was configured successfully.

Exit the configuration editor

After you have finished adding services and devices to the Application Server, follow these steps to exit the configuration editor.

Procedure

To exit the configuration editor:

1. From the **System Configuration Editor** window, click on **File** and click **Exit**.
2. Click **Yes** to save the configuration and exit the **System Configuration Editor**.

Rebuilding the Root server configuration files

Rebuild the configuration files on the Root server by running a command when the IBM FileNet Image Services software is not running. Perform the steps in this section on the Root server only.

Procedure

To rebuild the Root server configuration files:

1. Verify that the FileNet Image Services software is not running. If the software is running, enter the following command as the FileNet Image Services software user such as fnsw:

   ```
   initfnsw -y stop
   ```

2. Enter the following command to build the system configuration files:

   ```
   fn_build -a
   ```

   This command generates the configuration files that are used by components of the FileNet Image Services software. The fn_build command automatically creates the Network Clearinghouse database file (`/fnsw/local/NCH_db0`) if the file does not already exist.

3. Verify that this command runs successfully by checking that no errors have occurred. Correct any errors that occurred before you run the fn_build command again.

4. Start the FileNet Image Services software:

   ```
   initfnsw  start
   ```

Configuring the Application server

Configure the Application server for compatibility with the services that you added earlier on the Root server.

Before you begin

Perform all of the procedures in this section (and associated subsections) on the Application server. The IBM FileNet Image Services software must be running on the Root server.

About this task

The same version of FileNet Image Services software must be installed on both the Root server and the Application server.

Important: Run thewhatsup on both the Root server and the Application server to verify that the FileNet Image Services software is running on the Root server, but not running on the Application server.

Procedure

To stop the FileNet Image Services software:

If the FileNet Image Services software is running on the Application server, enter the following commands:

```
initfnsw  -y  stop
killfnsw  -DAy
```

Set ownerships and permissions

Create all directories needed for the installation using fn_setup and set the appropriate file ownerships and permissions for the directories. You will need information from the Installation Worksheet to complete this procedure.

Procedure

To run fn_setup:
1. Verify that you are logged on as a user with root privileges (the first time).
2. Run fn_setup by entering the following command:

   ```
   /fnsw/bin/fn_setup
   ```

   Answer all the prompts with appropriate information for this server.
   a. The NCH server is the generally the Root server. On an Application server, select 2=no.

      ```
      Is this the NCH server? (1-yes, 2=no) [2]:
      ```
   b. The NCH server name is generally the name of the Root server. On an Application server, enter the name of the Root server.

      ```
      Enter NCH server name [clark:ExampleCo]
      ```
   c. The system serial number must be the serial number of the Root server that you specified in the previous step.

      ```
      Enter system serial number [1234567890]:
      ```

      Tip: You can run the ssn tool on the Root server to determine its system serial number.
   d. Relational databases are only configured on servers with Index services, WorkFlo Queue Services (WQS), VWServices, or SQL services. If you are configuring an Application server without one these services, select 0=none; if the server has Oracle software installed, select 1=Oracle; if the server has DB2 software installed, select 2=DB2.

```
Enter the relational database type configured on this server (0=none,
1=Oracle, 2=DB2) [2]:
```

If you are planning to use an existing RDBMS instance, accept the default
RDBMS-related values listed at each prompt.

   e. If DB2 software exists on this server, enter the DB2 Client instance owner's
DB2 home directory.

If Oracle software (either client or server software) exists on this server,
enter the full pathname of the directory where that software is located.

```
Enter the RDBMS home directory [/home/fnsw/sqllib]:
```

If you are configuring a FileNet system with a remote database server, the
RDBMS home directory is the location of the client software on the FileNet
server.

   f. If an Oracle relational database exists on the server, enter the user and group
IDs at the following prompts:

```
Enter the RDBMS user ID [oracle]:
```

```
Enter the RDBMS group ID [dba]:
```

3. The fn_setup tool then displays the information you supplied so you can
confirm your entries:

```
This is the setup configuration:
NCH server name:  hpvenice:YourCorp
SSN:  11008016xx
Relational database type:  oracle
Relational database home:  /home/client_920
Relational database user ID:  oracle
Relational database group ID:  dba
Relational database ID:  IDB
Do you want to continue (y/n) [y]:
```

4. Determine whether or not you want to continue: y/n (default: yes).

You then receive messages similar to the following:

```
fn_setup: Creating file /fnsw/local/setup_config
fn_setup: Changing permission on FileNet software and databases
```

When fn_setup is finished, you return to the system prompt.

Building configuration files on the Application server

Use the fn_setup_rdb tool to build configuration files on Application server.

Before you begin

Verify that the IBM FileNet Image Services software is running on the Root server.
(You can run whatsup on the Root server.)

About this task

Now you need to build the correct configuration files and initialize the Application
server. The same version of FileNet Image Services software must already be
installed on both the Root server and Application server.

Important: There must be no NCH database already existing on the Application
server.

Procedure

To build the configuration files on the Application server:

1. As the FileNet software user such as fnsw, verify that the FileNet Image Services software is not running. If the software is running, enter the following commands:

   ```
   initfnsw  -y  stop
   killfnsw  -DAy
   ```

2. Enter the following command to build the system configuration files:

   ```
   fn_setup_rdb  -f
   ```

3. Verify that the following files do not exist on your Application server:
   - /fnsw/local/sd/root_station
   - /fnsw/local/sd/1/as_conf.s

   If the files exist, delete them from the Application server only.

Create logical volumes

Perform all of the procedures in this section on the application server.

Procedure

To create the logical volumes:

1. As a user with root privileges, open the Volume Manager.

   Tip: To place the file system on a specific disk, click the disk on which you want to configure the file system.

2. Create the necessary volumes by entering the appropriate information for each volume needed in your system.

   Place the volume on any disk with available space. However, be aware that these IBM FileNet Image Services databases are raw data volumes. The table below shows the minimum volume sizes, and provides space to record your own volume sizes.

Table 21. Your logical volume sizes

Volume Name	Minimum Size	Your Size (in MB)
fn_cache0	100m	
fn_transient_db0	320m	
fn_transient_rl0	256m	

Change volume settings

After you have created the appropriate volumes, configure the remaining volumes for proper operation.

About this task

Use the settings shown in Step 3 for each volume that you modify.

Procedure

To change the volume settings:

1. Select the fndg disk group.
2. Select the volume to configure (for example, fn_cache0).
3. From the new menu that displays, change the following settings:

Table 22. Volume parameters

Parameter	Setting
User	fnsw
Group	fnusr
Mode	664

4. Select **Apply** to save and exit.
5. Repeat steps 2 through 4 for each volume that needs to be changed.
6. After you have modified all of the necessary volumes, exit the Veritas software.

Set up links required for IBM FileNet Image Services for raw partitions

Create a `filenet.links` file to link the FileNet Image Services and RDBMS database names to their raw partitions.

About this task

Perform the steps in this section on the Application server. In this topic you will link the Image Services and RDBMS data base names to their partitions by creating the `filenet.links` file and entering the correct soft link information into the new file.

Procedure

To create the `filenet.links` file:

1. As a user with root privileges, enter the following command to change to the `/fnsw/dev/1` directory:

   ```
   cd /fnsw/dev/1
   ```

   If that directory does not exist, enter the following commands to create it and change to it:

   ```
   mkdir -p /fnsw/dev/1
   cd /fnsw/dev/1
   ```

2. Create and edit a file called `filenet.links` using your preferred editor (such as vi).

   Include a soft link command for each of the data bases that you created in the previous section. Link the data base name to the logical volume where you placed the data base by entering a command structured similar to the following, depending on your operating system:

   - Solaris systems

     On the Solaris system, depending on the volume management software you are using:

     – VERITAS Volume Manager

       ```
       ln -s /dev/vx/<disktype>/<diskgroup>/<logical volume> dbname
       (with path, /fnsw/dev/1)
       ```

       where <logical volume> is the disk location of the partition and dbname is the database name. For example:

       ```
       ln -s /dev/vx/rdsk/fndg/fn_cache0   /fnsw/dev/1/cache0
       ```

     – Solaris Volume Manager

       ```
       ln -s /dev/md/rdisk/d##/ dbname (with path, /fnsw/dev/1)
       ```

where md stands for meta device, d## is the disk location of the partition and dbname is the database name. For example:

```
ln  -s  /dev/md/rdisk/d1  /fnsw/dev/1/cache0
```

Important: The `filenet.links` file contents shown below are examples ONLY. (The links you create must reflect the actual allocation of the volumes on your system.) In the `filenet.links` file, you MUST have unique logical volume assignments for all partitions. (Verify that no two partitions share the same logical volume assignment and that no partition is assigned to a logical volume occupied by the any part of the operating system.)

Your file must look similar to the following:

- Solaris systems - VERITAS Volume Manager

```
ln  -s  /dev/vx/rdsk/fndg/fn_cache0   /fnsw/dev/1/cache0
ln  -s  /dev/vx/rdsk/fndg/fn_transient_db0  /fnsw/dev/1/transient_db0
ln  -s  /dev/vx/rdsk/fndg/fn_transient_rl0  /fnsw/dev/1/transient_rl0
```

- Solaris systems - Solaris Volume Manager

```
ln  -s  /dev/md/rdisk/d1 /fnsw/dev/1/cache0
ln  -s  /dev/md/rdisk/d1  /fnsw/dev/1/transient_db0
ln  -s  /dev/md/rdisk/d1  /fnsw/dev/1/transient_rl0
```

3. Close the file and save the changes.
4. Use chmod to change the permission of the `filenet.links` file by entering the following:

```
chmod  755 filenet.links
```

If you do not change the permission of `filenet.links`, you will not be able to execute the file.

5. Run the `filenet.links` file by entering the following commands:

```
cd  /fnsw/dev/1
./filenet.links
```

6. Examine the contents of the `/fnsw/dev/1` directory.

To display the volume owner and group use information, enter the following command:

```
ls -lL
```

The -L option lists the file or directory contents that the link references.

The directory must contain the linked directories specified in the `filenet.links` file. If not, verify the permission on the `filenet.links` file, and run the file again.

Initialize application server data sets

If there is NO relational database software, either server or client, installed on this application server, skip to "Initialize the FileNet Image Services databases" on page 83.

Perform procedures in this section (and associated subsections) on the application server.

If relational database software is installed on this Application server, continue with the following sections.

Configure FileNet data sets on the application server

Configure the FileNet data sets with DB2 and Oracle software.

Configure the FileNet data sets by following instructions for your relational database system:

- "On Application Servers with DB2 client software"
- "On Application servers with Oracle software"

On Application Servers with DB2 client software

Ask the Database Administrator to start the DB2 software before initializing the IBM FileNet Image Services databases.

Procedure

To start the DB2 software:

Ask the Database Administrator to start the DB2 software before initializing the FileNet Image Services databases.

See the *IBM FileNet Image Services Guidelines for Installing and Configuring IBM DB2 Software*. To download FileNet Image Services documentation, see "ibm.com and related resources" on page v.

What to do next

Skip to the section, "Initialize the FileNet Image Services databases" on page 83.

On Application servers with Oracle software

Verify that the Oracle software is configured correctly for both local and remote Oracle instances.

Before you begin

Ask the Database Administrator to start Oracle before initializing the IBM FileNet Image Services databases.

Procedure

To verify the Oracle software:

1. Verify that the Oracle Instance has the correct SID. As a user with root privileges, enter:

   ```
   ps -ef |
   grep -i ora
   ```

   The output looks similar to the following example where the SID appears at the end of process name. (In this example, the SID is IDB.)

   ```
   oracle user 1127  1  0  Mar 11 ?  0:18  ora_pmon_IDB
   oracle user 1129  1  0  Mar 11 ?  0:34  ora_dbwr_IDB
   oracle user 1131  1  0  Mar 11 ?  0:18  ora_lgwr_IDB
   oracle user 1133  1  0  Mar 11 ?  0:01  ora_smon_IDB
   ```

2. Verify that the following Oracle variables are set to match the existing Oracle instance:

   ```
   ORACLE_HOME (set for instance)
   ORACLE_SID (set for System ID)
   ORACLE_UID (set for Oracle database administrator user)
   TWO_TASK (set if Oracle database is on a remote Oracle server)
   ```

   As each user, enter the following commands:

   ```
   echo  $ORACLE_HOME
   echo  $ORACLE_SID
   echo  $ORACLE_UID
   echo  $TWO_TASK
   ```

3. Compare the output of the above command to the setting determined in "Oracle variables" on page 29. If the ORACLE_SID and the ORACLE_HOME are not set correctly, see the Database Administrator for the system to determine the correct settings.

   Important: In addition, the Database Administrator must create the default table-spaces with the names you entered in the FileNet System Configuration Editor. See the Tablespace table in "Table space names and sizes" on page 29 for this information. If the Oracle software is not running and if the new table spaces have not been created, the initialization process will fail.

4. Remote Oracle Servers Only:

   Important: Verify with the Database Administrator that the Oracle Client software has been successfully installed on the FileNet Image Services server.

   a. As the FileNet Image Services software user such as fnsw, run the following command on the FileNet Image Services server to create the ora_users.sql file:

      ```
      fn_oracle setquotas
      ```

   b. Copy these scripts from the FileNet Image Services server to the corresponding directories on the Oracle server:

      ```
      /fnsw/oracle/FileNet.sql/
      /fnsw/local/oracle/ora_users.sql
      ```

   c. Ask the Database Administrator to run this script on the remote Oracle server:

      ```
      SQL>@FileNet.sql
      (grants privileges to FileNet Image Services users)

      SQL>@ora_users.sql
      (assigns quotas, default tablespaces, and temporary tablespaces)
      ```

Initialize the FileNet Image Services databases

Use thefn_util init command to initialize the IBM FileNet Image Services databases for the Application server.

Procedure

To initialize the databases:

As the FileNet Image Services software user such as fnsw, enter the following command to initialize all FileNet Image Services databases configured on this server:

```
fn_util  init
```

After the databases are initialized, the program checks for the presence of transient.ddl file in the `/fnsw/local/sd/1` directory. A message displays as the new database partitions are initialized and zeroed out.

Reset file ownerships and permissions

After you have created the IBM FileNet Image Services data sets, you must reset the RDBMS ownership and permissions.

Procedure

To reset the file ownerships and permissions:

1. As a user with root privileges, enter the following command:

```
/fnsw/bin/fn_setup -d
```
The -d option accepts all the default settings for all prompts, and sets only file permissions.

2. After fn_setup finishes, continue with the next section.

What to do next

To continue with the Application Server configuration, skip to "Start the FileNet Image Services software."

Start the FileNet Image Services software

Perform the procedures in this section (and associated subsections) on the Application server to start the FileNet Image Services software.

Procedure

To start the FileNet Image Services software:

1. As the FileNet software user such as fnsw, start X Windows (if you have not already done so).
2. Stop all FileNet processes:
   ```
   killfnsw -DAy
   ```
3. Start the updated FileNet Application server software:
   ```
   Xtaskman &
   ```
   The FileNet Task Manager interface is displayed.

   Important: If RDBMS software is installed on this Application server, start it before you start FileNet Image Services for the first time. If the RDBMS software is not available when the FileNet Image Services software starts, the FileNet Image Services software displays error messages. If you receive FileNet Image Services error messages, start the RDBMS software and restart the FileNet Image Services software.

4. After the TM_daemon message displays in the Process table, select the **Monitor** menu.
5. From the Monitor menu, select the **Event Logs** option.
6. From the Event Log window, select **DISPLAY** > **Dynamic**. (The Dynamic option enables screen refreshes each time the messages are logged.) Return to the FileNet Task Manager window, but do not close the Event Log window.
7. From the FileNet Task Manager window, click **START**.
8. After the FileNet software startup process finishes, click **CLOSE**.
9. Review the contents of the Event Log window to verify that there are no error messages from the software startup.

Modify the `/etc/inittab` file (optional)

Edit the `/etc/inittab` file to allow the IBM FileNet Image Services software to automatically start during the boot process.

Before you begin

If you do not know whether the relational database software will be started when the FileNet Image Services software starts, you might choose not to uncomment the line in the `inittab` file. If the relational database is not available when the

FileNet Image Services software starts, the FileNet Image Services software generates error messages. If you receive error messages of this type, start the DB2 or Oracle software, and then restart the FileNet Image Services software.

Procedure

To edit the /etc/inittab file:
1. Make a backup copy of the inittab file.
2. As a user with root privileges, change to the /etc directory by entering the following command:

   ```
   cd /etc
   ```
3. Using your preferred editor, such as vi, to open and edit the inittab file.
4. Locate the following line:

   ```
   rcfn:234:wait:/bin/sh /etc/rc.initfnsw </dev/console>/dev/console>&1
   ```
5. Remove the comment symbol from the beginning of the line.
6. Save the change and exit the text editor.

Make system backups

Make complete system backups for the Root/Index server and the Application server. After you have backed up the system, the Application server is ready for production.

About this task

Perform the steps in this section on all servers.

Procedure

To make complete backups of your system configuration:

See the following documents:
- *IBM FileNet Image Services System Administrator's Handbook*
- *IBM FileNet Image Services System Administrator's Companion for UNIX*
- *IBM FileNet Image Services Enterprise Backup and Restore User's Guide* Use EBR to back up the MKF databases: transient and cache.

To download these documents from the IBM support page, see "ibm.com and related resources" on page v.

What to do next

After you have backed up the system, the Application server is ready for production.

Begin production mode for the application server

The Application server is now ready for production.

Appendix B. Adding a storage library server

To configure multiple storage library servers on your IBM FileNet Image Services system, gather the information requested in the "Installation Worksheet."

Before you begin

To successfully complete the instructions in this appendix, you must have already gathered the information requested in the Installation Worksheet for your operating system for appropriate information, performed all of the steps in the Operating System Requirements, and transferred the information to the Installation Worksheet.

If you still have to complete the Installation Worksheet, go to Chapter 2, "System Administrator tasks - Solaris," on page 7.

Transfer all of the requested information to the appropriate sections on the Installation Worksheet. All of the information necessary to complete the Image Services installation on the Storage Library server will be in one easy-to-find place.

If you have not completed these tasks for the Storage Library server, do them now before continuing with the rest of this appendix.

Multiple storage library server uses

Multiple storage library servers enhance system capacity and performance.

The portion of the IBM FileNet Image Services software that stores and retrieves document images is known as Storage Library Services. This software controls every activity in the storage library to verify that all documents are stored and retrieved from the optical disks in an orderly manner. Storage library services can be added to any system on a combined server, dual server, or multiserver installation. The storage library server maintains the name and location of every document stored in the storage library. In addition, the server contains one or more magnetic disk drives to store images temporarily before they are written to optical disk permanently.

Multiple storage library servers are set up on a system to enhance capacity and performance:
- If you already have as many storage libraries on a server as possible, or if you cannot physically fit another optical disk library in close enough proximity to the existing server, you need another server to add an optical disk library to the system and to enable the system to handle more disks online.
- If the processor, I/O bus, or magnetic disks on a storage library server are already pushed to their maximum throughput, adding another storage library server can increase system performance. However, if the existing server has not reached its performance limit, adding another storage library server can decrease system performance slightly because of the overhead of controlling the additional server.

Multiple storage library servers are not a solution for a disaster recovery plan because you cannot write the primary copy of one document to one storage library

server and the transaction log copy to another storage library server. Both copies are always written to the same storage library server. Database Maintenance does not let you select destination storage library servers for a transaction log family.

Prepare the storage library servers for optical devices

Perform the procedures only on the storage library servers. Perform the referenced procedures listed below in the order in which they appear.

Prepare Solaris systems

Perform the referenced procedures listed below, in the order in which they appear, only on the Storage Library servers (unless instructed otherwise).

About this task

You do not have to install RDBMS software on Storage Library servers. Some of the referenced procedures contain information related to installing and configuring RDBMS software, ignore all procedures related to RDBMS configuration unless specifically instructed to perform an action.

Procedure

1. Modify the server resources (if you have not already done so) by completing "Verify or change operating system kernel limits" on page 8
2. Verify that the /etc/host file contains the correct host names for the Root/Index and the Storage Library servers by completing "Update /etc/hosts file" on page 14
3. Create the FileNet software user such as fnsw and the fnusr, dba, fnadmin, and fnop groups by completing the relevant portion of "Create FileNet Image Services users and groups" on page 15

   Tip: On the Storage Library server you do not need to create an RDBMS user or group.
4. Set the FileNet Image Services software user password by completing the relevant portion of "Set up password for FileNet software user" on page 18
5. Install volume management software on the Storage Library servers by completing "Verify volume management software" on page 19
6. Create the Image Services file systems by completing "Create logical volumes for Image Services data sets" on page 19

Installing IBM FileNet Image Services software

Follow these instructions to install the FileNet Image Services software on a Storage Library server.

Procedure

To install the FileNet Image Services software:

1. Install the FileNet Image Services software on the Storage Library servers by completing the section "Running the FileNet Image Services installation program" on page 34.
2. On UNIX systems, install show stopper fixes on the Storage Library servers by completing "Install the required pre-startup fixes" on page 41.

3. On UNIX systems, set up the installation environment using the inst_templates tool on the Storage Library servers by completing "Install the user environment templates" on page 41.

4. Restart the servers. First restart the Root server, then restart the Storage Library servers.

What to do next

Continue with "Configure the Root server." Perform the procedures only on the server indicated at the beginning of each section. (You might not need to perform some of the procedures included in this section.)

Configure the Root server

Perform the steps in this section and its subsections on the Root server, or on each server with a cache.

Clearing the transient database

If you are adding a storage library server to an already existing and operational IBM FileNet Image Services system, you must commit documents in the transient database to ensure that the batches that have not yet been committed are not lost while you configure the Storage Library server.

Procedure

To verify that the transient database is clear:

1. Verify that the FileNet Image Services software is running by entering the following command: `whatsup`

   The whatsup display is similar to the following example. Your local System Administrator can tell you if anything appears to be abnormal.

   ```
   USER    PID     PPID   Start Time    Processes
   fnsw    12427   1      06/14/2008    COR_Listen -px -s5 -d20
   fnsw    21133   1      06/14/2008    COR_Listen -px -s1099
   fnsw    21385   1      06/14/2008    COR_Listen -pt -d20
   fnsw    22708   1      06/14/2008    CSM_daemon
   fnsw    14810   1      06/14/2008    CSMs
   fnsw    15256   1      06/14/2008    DOCs
   fnsw    16275   1      06/14/2008    INXbg -s IndexServer
   fnsw    16515   1      06/14/2008    MKF_clean
   fnsw    11420   1      06/14/2008    PRI_daemon
   fnsw    12193   1      06/14/2008    PRI_fetch 0
   ```

2. Print or delete all outstanding print requests.

3. Commit or delete all uncommitted batches.

4. Examine the remaining contents of cache by entering: `CSM_tool`

   Important: The FileNet Image Services software must be running for CSM_tool to work properly.

5. To obtain statistics on bes_cache, page_cache, and print_cache, enter the following command at the CSM_tool prompt: `st`

   All caches should show no locked objects. These locked objects represent uncommitted batches, unwritten images, and pending print jobs.

   Tip: If you have any FAX servers, there will be two locked objects per FAX server in print_cache.

6. Enter the following command to quit the CSM_tool: q

Add storage library servers to the configuration database

Procedure

To add an additional storage library server:

1. At an X station, a workstation that supports X Windows or Common Desktop Environment (CDE), or a PC with an X Windows emulator, login to your server as the FileNet software user such as fnsw.
2. Open a new window and enter the following command:

   `fn_edit &`
3. Verify that the two-part domain information is correct. (The two-part domain name is set up as follows: <Domain>:<Organization>

   The System Configuration Editor window displays.
4. On the Procedures tab in the System Configuration Editor window, select the Add a Storage Library server option from the Procedure List Box, and click **Run**.

   Tip: Use online help when completing the following steps.
5. Enter the name of the Storage Library server. The server name of the storage library server is user defined. Click **Next**.
6. Enter the network address of the Storage Library server. See the "Installation Worksheet" for appropriate information. Click **Next**.
7. Respond to the **Do you want to use fast batch committal?** prompt by clicking yes or no. (If you select yes, default settings are automatically entered into the system. You can change the settings later if necessary.)

   Important: If fast batch committal is configured, you cannot use cluster indexes. See the System Administrator's Handbook for more details on fast batch committal and clustering. The maximum document size for remote committals using fast batch is 2.1 GB. See the Multi-Committal and Cross-Committal Configuration Handbook for more information about remote committal. To download these documents from the IBM support page, see "ibm.com and related resources" on page v.
8. Choose the number of BES commitment processes (1-4).
9. Enter the path for the cache partition (default: `/fnsw/dev/1/cache0`).
10. Enter the cache dataset size.
11. Enter the path for the transient database (default: `/fnsw/dev/1/transient_db0`).
12. Enter the dataset size for the transient database.
13. Enter the path for the transient database redo log (default: `/fnsw/dev/1/transient_rl0`).
14. Enter the dataset size for the transient database redo log.
15. Enter the path for the permanent database (default: `/fnsw/dev/1/permanent_db0`).
16. Enter the dataset size for the permanent database.
17. Enter the path for the permanent database redo log (default: `/fnsw/dev/1/permanent_rl0`).
18. Enter the dataset size for the permanent database redo log.
19. Verify that you have entered the information correctly:

- Click the Network Addresses Tab to verify that the Storage Library server is listed.
- Click the Server Application Services Tab to verify that the Storage Library server is listed.
- Click the Datasets Tab to see the datasets you added to the Storage Library server, including cache0, transient_db0, transient_rl0, permanent_db0, permanent_rl0.

20. Exit from the System Configuration Editor and save your changes.

Rebuilding the configuration files on the root server

Stop the IBM FileNet Image Services software and rebuild the configuration files on the root server. Perform the steps in this section on the root server only.

Procedure

To rebuild the configuration files on the root server:

1. On the root server, logon as the FileNet Image Services software user.
2. Verify the FileNet Image Services software is not running. If the software is running, enter the following command:

   ```
   initfnsw -y stop
   ```

3. Update the configuration files for the server by entering the following command:

   ```
   fn_build -a
   ```

   This command generates the configuration files used by the components of the FileNet Image Services software. Each file is produced in two steps. First a temporary file is produced with a .new extension. Then, if there is a difference between the .new version and the existing version, the .new version of the file is copied over the existing version of the file.

4. Verify that the command runs to completion by checking that no errors have occurred. Correct any error that occurs before you run the command again.
5. Start the FileNet Image Services software by entering:

   ```
   initfnsw start
   ```

Configure the storage library server

Perform this section and its subsections on each Storage Library server being added to the system. IBM FileNet Image Services software must be running on the Root server.

Before you begin

The procedures in this section assume that the same version of FileNet Image Services software is installed on both the Root server and the Storage Library server.

Important: Verify that FileNet Image Services is running on the Root server, and not running on the Storage Library server. (You can run whatsup on the Root server.)

Procedure

If the FileNet Image Services software is running on the Storage Library server, enter the following commands:

```
initfnsw -y stop
killfnsw -DAy
```

Set file ownerships and permissions

Use the fn_setup tool to set the Storage Library server file ownerships and permissions. You will need information from the Installation Worksheet to complete this procedure.

Procedure

To run fn_setup:

1. Verify that you are logged on as a user with root privileges (the first time).
2. Run fn_setup by entering the following command:

   `/fnsw/bin/fn_setup`

   Several prompts display. Answer the prompts with information related to your system.
3. Determine whether or not this is the NCH server, `1 = yes, 2 = no` (default: no). Reply `No` for the Storage Library server.
4. Enter the NCH server name (for example, root/index_domain:YourCorp). Enter the domain and organization of the Root server.
5. Enter the `system serial number (SSN)`. Enter the SSN of the Root server (for example, 1234567890).

   Important: The SSN is written onto all storage media and must be unique for each FileNet Image Services system. If you have more than one FileNet Image Services system (domain), each must use its own unique SSN to prevent potential problems if media are ever transferred from one FileNet Image Services system to another. The valid range of SSNs is 1000 through 2147483646.
6. Enter the RDBMS software configured on the server: `0 = None,1 = Oracle, 2 = DB2`. (For a Storage Library server, select `0 = None`.)

   Relational databases are only configured on servers with Index services, WorkFlo Queue Services (WQS), SQL services, or VWServices.
7. Determine whether or not you want to continue: `y/n` (default: yes).

   You then receive messages similar to the following:

   ```
   fn_setup: Creating file /fnsw/local/setup_config
   fn_setup: Changing permission on FileNet software and databases
   ```

   When fn_setup is finished, you might receive a message indicating `exit status = 0 (success)(this is not an error.)` If necessary, press **Return** to go the system prompt.

Build configuration files on the storage library server

Use the procedures in this section to create the logical volumes for all of the FileNet data sets that are used by the storage library server.

Procedure

To build the configuration files on the storage library server:

1. At an X station, a workstation that supports X Windows or Common Desktop Environment (CDE), or a PC with an X Windows emulator, log on to the server as a user with root privileges (a member of the fnadmin group) (the first time).

2. Verify the FileNet Image Services software is not running. If the software is running, enter the following command:

```
initfnsw -y stop
```

3. Update the configuration files for the server by entering the following command:

```
fn_build -a
```

This command generates the configuration files used by the components of the FileNet Image Services software. Each file is produced in two steps. First a temporary file is produced with a .new extension. Then, if there is a difference between the .new version and the existing version, the .new version of the file is copied over the existing version of the file.

4. Verify that the command runs to completion by checking that no errors have occurred. Correct any error that occurs before you run the command again.

5. Start the FileNet Image Services software by entering:

```
initfnsw start
```

Create logical volumes on the storage library server

Use VERITAS Volume Manager or Solaris Volume Manager to create the new volume group.

About this task

Perform all of the procedures in this section on all of the Storage Library servers on the system.

Procedure

To create the logical volumes:

Create the following file systems and volumes using either the virtual administrator or the storage administrator. The sizes shown in the table below are minimum sizes.

Important: For Sites with Disk Arrays ONLY: Disk arrays managed by the Veritas volume management software, do not always "grow" to an even MB boundary. You must verify the new size, after "growing" a volume, by displaying the volume information. The new volume size will display in Kilobytes if it did not "grow" to an even Megabyte boundary. Previous installations with a disk array (configured for RAID-5) have determined that the correct procedure for accurately "growing" a volume to an even Megabyte boundary is to make the new volume size evenly divisible by seven. It is uncertain if the suggestion is applicable for all disk arrays. (Check the most current version of the Release Notes for more information.)

Table 23. Logical volume names and sizes - Solaris

Logical Volume Name	Minimum Size of Logical Volumes (in MB)	Increment (in MB)
fn_cache0	100	100
fn_permanent_db0	100	100
fn_permanent_rl0	64	64
fn_transient_db0	320m	320
fn_transient_rl0	256m	256

Create symbolic links for each MKF data sets that use raw partitions

Link the IBM FileNet Image Services and MKF data set names to their volume names by creating the `filenet.links` file, entering the correct soft link information, and running the file.

About this task

Repeat the steps in this section on these servers for the FileNet Image Services groups and users:

- Application server during an application server installation.

Procedure

To create the symbolic links:

1. As a user with root privileges, change to the /fnsw/dev/1 directory:

   ```
   cd  /fnsw/dev/1
   ```

   Tip: If one or more of the subdirectories in this path do not exist yet, use the mkdir -p command to create them.

2. Use your preferred text editor to create and edit the filenet.links file by using your preferred text editor. Include a soft link command for each of the data bases that you created in the previous section. Link the data base name to the logical volume where you placed the data base by entering a command structured similar to the following, depending on the volume management software you are using:

   - VERITAS Volume Manager

     ```
     ln  -s  /dev/vx/disktype/diskgroup/logical_volume   dbname (with path, /fnsw/dev/1)
     ```

     Where *logical_volume* is the disk location of the partition and *dbname* is the database name. For example:

     ```
     ln  -s  /dev/vx/rdsk/fndg/fn_cache0   /fnsw/dev/1/cache0
     ```

   - Solaris Volume Manager

     ```
     ln  -s  /dev/md/rdisk/d##/ dbname (with path, /fnsw/dev/1)
     ```

     Where *md* stands for meta device, *d##* is the disk location of the partition and *dbname* is the database name. For example:

     ```
     ln  -s  /dev/md/rdisk/d1  /fnsw/dev/1/cache0
     ```

   - Solaris ZFS

     ```
     ln  -s  /dev/zvol/disk_type/zpool/zone_name/dbname (with path, /fnsw/dev/1)
     ```

     Where *zvol* is the ZFS volume, *zone_name* is part of the folder name and is optional, and *dbname* is the database name. For example:

     ```
     ln  -s  /dev/zvol/rdisk/fnzfs/zone1/fn_cache0  /fnsw/dev/1/cache0
     ```

   Important: The filenet.links file contents shown here are examples ONLY. (The links you create must reflect the actual allocation of the volumes on your system.) In the filenet.links file, you MUST have unique logical volume assignments for all partitions. (Verify that no two partitions share the same logical volume assignment and that no partition is assigned to a logical volume occupied by the any part of the operating system.)

   Your file might look similar to one of the following examples:

   Solsaris systems - VERITAS Volume Manager

```
ln  -s  /dev/vx/rdsk/fndg/fn_cache0   /fnsw/dev/1/cache0
ln  -s  /dev/vx/rdsk/fndg/fn_transient_db0   /fnsw/dev/1/transient_db0
ln  -s  /dev/vx/rdsk/fndg/fn_transient_rl0   /fnsw/dev/1/transient_rl0
```
Solaris systems - Solaris Volume Manager
```
ln  -s  /dev/md/rdisk/d1 /fnsw/dev/1/cache0
ln  -s  /dev/md/rdisk/d1 /fnsw/dev/1/transient_db0
ln  -s  /dev/md/rdisk/d1 /fnsw/dev/1/transient_rl0
```
Solaris systems - ZFS
```
ln -s  /dev/zvol/rdsk/fnzfs/zone1/fn_cache0   /fnsw/dev/1/cache0
ln -s  /dev/zvol/rdsk/fnzfs/zone1/fn_transient_db0   /fnsw/dev/1/transient_db0
ln -s  /dev/zvol/rdsk/fnzfs/zone1/fn_transient_rl0   /fnsw/dev/1/transient_rl0
```

3. Close the file and save the changes.

4. Use the chmod command to change the permission of the filenet.links:
   ```
   chmod 755 filenet.links
   ```

   Tip: If you do not change the permission of filenet.links, you cannot run the file.

5. Run the filenet.links file by entering the following commands:
   ```
   cd  /fnsw/dev/1
   ./filenet.links
   ```

6. Examine the contents of the /fnsw/dev/1 directory by entering the following command:
   ```
   ls  -lL
   ```

   The -l option displays the mode, number of links, owner, group, size (in bytes), and time of last modification for each file. The L option displays the file or directory referenced by a symbolic link.

   The directory must contain the linked directories specified in the **filenet.links** file. If the /fnsw/dev/1 directory does not contain the correct links, verify and, if necessary, update the **filenet.links** file with any changes, verify the permissions on the filenet.links file, and run the file again.

Initialize MKF data sets on the storage library server

Perform the steps in this section on the storage library server.

Procedure

As the IBM FileNet Image Services software user, enter the following command to initialize all FileNet Image Services databases configured on this server:
```
fn_util  init  -y
```

The fn_util init command initializes the transient and permanent databases on the storage library servers. After the databases are initialized, the scripts check for the presence of permanent.ddl and transient.ddl files in the /fnsw/local/sd/1 directory. A message identifies the new database partitions as they are initialized and zeroed.

Configure network parameters (optional)

This section assumes that you have already installed and configured the appropriate network protocol on the Root/Index server.

Before you begin

Before beginning the steps in this section, you must know the following information: the Internal Network Number for your system, the File server name, and the Media Access Controller (MAC) address. See the "Installation Worksheet" for the correct information.

Important: If you are configuring Dual Homing support, you must have two network adapter cards installed on your system: one for Ethernet, one for Token Ring.) Configure the appropriate protocol for each network adapter card on your system.

Procedure

To configure the network parameters:

1. Go to an X-station, a workstation that supports X Windows or Common Desktop Environment (CDE), or a PC with an X Windows emulator and login to your server as the FileNet Image Services software user, such as fnsw.
2. Open a new window, and enter the following command:

   ```
   fn_edit  &
   ```
3. Verify that the two-part domain information is correct. (The syntax of the two-part domain name is: *Domain*:*Organization*.)
4. Select the **System Attributes** Tab and select **Network Protocols** from the **Options** list.
5. From the **Protocol Preference** option choose the **TCP** option for TCP/IP protocol.
6. From the **Protocol Preferences** option field, select the system appropriate preference from the pull down options list.
7. From the **System Configuration Editor** window, select the **Network Addresses** Tab.
8. Enter the network address (if one is not already present).

   You can enter up to eight network addresses for each network card in the server. The format for a TCP/IP address is shown in the following example:

   ```
   192.0.2.5
   ```

   After the FileNet Image Services software restarts, fn_build will determine if any changes have occurred in the fn_edit configuration.

Starting databases and network software

Initialize the transient and permanent databases on your storage library server and then start the IBM FileNet Image Services software.

Procedure

To initialize the MKF databases and start the FileNet Image Services software:

1. On the new storage library servers, log on as the FileNet Image Services software user such as fnsw.
2. Initialize the permanent and transient databases by entering the following commands:

   ```
   fn_util  inittrans
   fn_util  initperm
   ```

   The `fn_util inittrans` and `fn_util initperm` scripts initialize the transient and permanent databases on the Storage Library server. (After the databases

are initialized, the scripts check for the presence of permanent.ddl and transient.ddl files in the /fnsw/local/sd/1 directory.)

If you are attaching an existing storage library server to a new system, you may receive the following message:

```
63,0,10  <fnsw >   ds_init (14983) ... CRITICAL
The Scalar Numbers Table is behind the snt.chkpt file.
```

This message indicates the scalar numbers table and the checkpoint file are out of synchronization. Continuing in this condition may cause multiple documents to be committed with the same document ID. To solve this problem, run the following commands to start the permanent database and update the scalar numbers table:

```
fn_util  startdb
SNT_update
```

Document Services cannot function until this problem is resolved.

3. After SNT_update is finished, run fn_util init again.
4. Start the FileNet Image Services application software by entering:

   ```
   Xtaskman  &
   ```

5. From the FileNetTask Manager window, select **RESTART**.
6. Run a start database command on every storage library server to start up the MKF databases and the Network Clearinghouse background processes that are needed during the installation process.

   As the FileNet Image Services software user, enter the following command on every storage library server:

   ```
   fn_util startdb
   ```

   Running the fn_util startdb command shuts down the FileNet Image Services software and starts up all FileNet Image Services databases present on the storage library server.

Adding a new storage library server

After you have run the fn_util startdb script on every storage library server, you are ready to run the add_osvr utility, which adds a new storage library server to the system configuration files.

About this task

In addition to adding a new storage library server, the add_osvr utility updates the permanent and transient databases on each storage library server to reflect the new servers. The add_osvr utility also updates the family and surface locator tables on the Document Locator server and the family disk table on each new storage library server.

Procedure

To add the storage library server:

1. Go to an X-station, a workstation that supports X Windows or Common Desktop Environment (CDE), or a PC with an X Windows emulator and login to your server as the FileNet Image Services software user.
2. Enter Xtaskman at the system prompt. Click **Backup**. This command also starts COR.listen.
3. Obtain the server ID assigned to each new Storage Library server by using one of the following methods:

- The server ID is assigned and viewed by using the fn_edit utility. Run fn_edit. Click the Server Application Services tab, then the Scheduling subtab. Scroll to the right to see the **Storage Library ID** for each server.
- Start nch_tool.

  ```
  nch_tool
  ```
- List the properties to view the storage library server ID in the NCH database.

  In the following example, OsarServer2 is the new OSAR server. On the line beginning: osarDesc, 0 3 ... 3 is the number used for the add_osvr command. The nch_tool command would be:

  ```
  nch_tool>listprop OsarServer1

  Properties for OsarServer1:<domain>:FileNet
  (addressList, [192.0.2.1,32769])
  (osarService, "Library Service")
  (osarDesc,0 2 DocServer:<domain>:FileNet page_cache1:Persistent:FileNet

  nch_tool>listprop OsarServer2
  Properties for OsarServer2:<domain>:FileNet
  (addressList, [192.0.2.2,32769])
  (osarService, "Library Service")
  (osarDesc,0 3 DocServer:<domain>:FileNet page_cache2:<domain>:FileNet)
  ```

4. To run add_osvr, enter the following command from any station with Storage Library Services:

   ```
   add_osvr server id 1 server id 2 ... server id n
   ```

   where *server id 1 server id 2 ... server id n* are the storage library server identification numbers of the servers you are adding. (These numbers are not the station numbers.) Enter a space between each server ID.

   The add_osvr command creates the family_locator table on the Combined server and updates the family_disk table on the new storage library server.

   After running the add_osvr command, a message in the event log instructs you, "Run Database maintenance to resave all media families." On a new installation of root or Storage Library servers there are no media families, so you can ignore this message.

   Entering add_osvr with no parameters displays a description of the program and a usage statement. After the add_osvr utility has completed, you will see the following message:program terminated successfully

   If the system crashes or is restarted while add_osvr is running, you can rerun the program. If add_osvr fails for any reason, correct the problem and rerun the program. DO NOT run any other programs until add_osvr completes. If the process cannot be completed, restore your system from a backup.

Logon to the configuration database

Start the IBM FileNet Image Services System Configuration Editor

Procedure

To start the FileNet Image Services System Configuration Editor:

1. Go to an X-station, a workstation that supports X Windows or Common Desktop Environment (CDE), or a PC with an X Windows emulator and login to your server as the FileNet Image Services software user, such as fnsw.
2. Open a new window, and enter the following command:

   ```
   fn_edit &
   ```

3. Verify that the database and domain names are correct, and click **OK**. (The two-part domain name is set up as follows: *Domain*:*Organization*.) The System Configuration Editor window displays.

   Tip: The online help contains information about all of the tabs. You can access the online information by selecting the Help menu option in the System Configuration Editor window.

Configure storage library devices

You can configure storage library devices on the storage library server automatically or manually.

Before you begin

If there are no storage libraries on the server, skip to the next section, "Start the FileNet Image Services software" on page 101.

About this task

Tip: Even though an ODU (Optical Disk Unit) is technically not a storage library because it lacks a robotic arm, for the purposes of configuration you must perform the same steps for an ODU that you would perform for a storage library.

Procedure

To configure a storage library:

1. To view the information concerning the optical library devices configured on your server, select the **Storage Libraries** tab from the System Configuration Editor window.

   See the "Installation Worksheet" for information concerning your optical library devices.

2. Click the Procedures tab. To configure a storage library, you have two choices:

3. **Automatically Configure a Storage Library**

   Storage libraries can be configured automatically if they are attached correctly to the server, and if they are fully powered on.

   a. Scroll through the list of available procedures and select **Automatically Configure Storage Library**.

      The fn_edit program gets all the information it needs directly from the storage library and does not display any messages unless it encounters an error.

   b. To view the result of the procedure and to see information about other storage libraries already configured on the system, select the **Storage Libraries** tab.

   c. Exit the Configuration Editor and save your changes.

   d. Skip to the next section.

4. **Manually Configure a Storage Library**

   To configure a storage library manually:

   a. Scroll through the list of available procedures and select **Manually Configure Storage Library**.

   b. Respond to the prompts with the appropriate information from the Worksheet. You are prompted to supply the following details:

      • Library type

- Library number
- Number of optical drives in the library
- Types of optical drives in the library
- Position of the optical drives in the library
- SCSI address of each optical drive and the robotic arm in the library.

   Tip: The four part SCSI address values are taken from the information you wrote down from the ioscan display earlier. For example, you might enter:

   `4 0 1 0`

   where:
   - the first number is the SCSI adapter ID (the number you copied from the I (Instance) column of the ioscan display)
   - the second number is the bus ID (the first of the three numbers from the H/W Path column)
   - the third number is the target device ID (the second of the three numbers from the H/W Path column)
   - the fourth number is the Logical Unit Number (LUN) (the third number from the H/W Path column)

   After you have answered all the prompts, fn_edit completes the configuration.

c. To view the result of the procedure and to see information about other storage libraries already configured on the system, select the **Storage Libraries** tab.

d. Exit the Configuration Editor and save your changes.

Set file ownerships and permissions (if necessary)

After configuring optical devices, you must reset the file permissions. Use the fn_setup tool to set the file ownerships and permissions on the Storage Library server.

Before you begin

Perform the steps in this section on the Storage Library servers only if you configured optical devices.

About this task

See the "Installation Worksheet" for correct information.

Procedure

To set the file ownerships and permissions:

1. Logon as the FileNet software user.
2. Run the fn_setup utility by entering the following command:

   `/fnsw/bin/fn_setup -d /`

   The -d option causes fn_setup to set ownerships and permissions only, starting at the root (/) directory, and not to prompt you to verify system information.

   You then receive messages similar to the following:

```
fn_setup: Creating file /fnsw/local/setup_config
fn_setup: Changing permission on FileNet software and databases
```

When fn_setup is finished, you might receive a message indicating "exit status = 0 (success) (this message does not indicate an error.)" If necessary, press **Return** to go the system prompt.

Start the FileNet Image Services software

Start the IBM FileNet Image Services software on each server in your FileNet Image Services system.

About this task

Perform the steps in this section on all servers: Root server first, then the Storage Library servers.

Procedure

To start the software:

1. From the command line prompt, logon as the FileNet Image Services software user such as fnsw and enter the following command to start the FileNet Image Services software on all servers; Root server first, then the Storage Library server:

   ```
   initfnsw  restart
   ```

2. Start Xapex, and use Database Maintenance (on any server) to re-save all media families, and resolve any warning or error messages that appear.

3. Use the vl command to check the event log. If any documents were committed before the media families were re-saved, you might see a warning message. If so, add or change the preferred library information to match the current storage library configuration.

Connect Storage Library devices

Perform all of the procedures in this section on all of the Storage Library servers on the system.

Procedure

To connect storage library devices:

1. Stop the IBM FileNet Image Services software by entering the following command:

   ```
   initfnsw  -y  stop
   ```

2. Logoff the system, and power off your server.

3. Connect the optical storage device to the appropriate SCSI port on your server.

4. Power on the optical storage device. (If necessary, wait for the optical device to enter the ready state before continuing with the next step.)

5. Power on your server. After the server finishes booting, logon as a user with root privileges.

   Attention: If you have an HP 600 FX (configured in multi-LUN mode) connected to your server, do not use probe-scsi-all to interrogate the SCSI bus device status. The command will cause errors, and will not detect devices properly.

6. The FileNet Image Services installation program cannot install a new fnsod (FileNet SCSI Optical Device) driver automatically, so you must install it manually. As a user with root privileges, enter:

   ```
   fnsod.install /fnsw/bin/fnsod
   ```

   The new driver will go into affect when you restart the server in the next step.

7. At the system prompt, enter the following command:

   ```
   restart -- -r
   ```

   All currently connected optical devices must be configured automatically after the system restarts.

8. After the server finishes booting, logon as a user with root privileges.

9. Verify that all devices are configured properly. List the currently installed optical device drivers by entering the following command:

   ```
   ls  /dev/fnsod*
   ```

   The list will be similar to the following example:

   ```
   /dev/fnsod.0,2,5,0
   /dev/fnsod.0,2,6,0
   ```

Configure the storage library devices

Perform the procedure in this section on all storage library servers to which you added optical peripherals.

Procedure

To configure a storage library:

1. Logon as the IBM FileNet Image Services software user such as fnsw, and start X Windows (if you have not already done so).

2. Open a new window, and enter the following command: fn_edit &

3. Verify that the database and domain names are correct, and click **OK**. (The two-part domain name is structured as follows:*Domain*:*Organization*

4. From the **FileNet Image Services System Configuration Editor** window, select the **Procedures** tab.

5. Locate and select the **Automatically Configure A Storage Library** procedure from the list of available procedures.

6. Click **Run**.

7. Check the **Storage Libraries** tab to verify that the correct storage library devices were configured. Save the changes to the configuration database, and exit the Configuration Editor.

8. Build the system configuration files by entering:

   ```
   fn_build  -a
   ```

9. Using Xtaskman, restart the FileNet Image Services software on all servers; Root server first, then the storage library server.

10. When the system is running again, log on as the FileNet Image Services software user such as fnsw and start Xapex. Use Database Maintenance (on any server) to resave all media families, and resolve any warning or error messages that appear.

11. Use the vl command to check the event log. If any documents were committed before the media families were resaved, you may see a warning message. If so, add or change the preferred library information to match the current storage library configuration.

Modify the `/etc/inittab` file

Perform all of the steps in this section on all Storage Library servers to which you added optical peripherals.

Procedure

To edit the /etc/inittab file:

1. Change to the /etc directory by entering the following command:

    cd /etc

2. Usie your preferred text editor to open and edit the inittab file.

3. Locate the following line:

    # fn:3wait:/bin/sh /etc/rc.initfnsw </dev/console> /dev/console>&1

4. Remove the # sign from the beginning of the line.

5. Save the change and exit the text editor.

Storage library server utilities (optional)

You can use the move_disk and del_osvr utilities to address optical disk and library issues concerning your storage library server.

This section briefly describes the function and uses of the following storage library server utilities: move_disk and del_osvr.

- move_disk - move optical disks from one optical disk library to another.
- del_osvr - remove a storage library server from your system.

Do not use the utilities described in this section on any storage library server unless a specific need exists. For more information about storage library server utilities, see the *IBM FileNet Image Services System Tools Reference Manual*. To download the document from the IBM support page, see "ibm.com and related resources" on page v.

Important: Whenever any change in storage library configuration occurs, especially when a storage library is deleted, it is important to resave all the media families manually and resolve any errors. See the Database Maintenance chapter of the *IBM FileNet Image Services System Administrator's Handbook* for information about saving media families. To download the document from the IBM support page, see "ibm.com and related resources" on page v.

Moving disks between storage library servers

Run the move_disk utility if you want to move optical disks from an Optical Disk Library attached to your old Storage Library server to an Optical Disk Library attached to your new Storage Library server in order to balance disks equally between each server.

About this task

The move_disk utility does the following:

- Reads optical disk information from the Storage Library server database where it currently resides.
- Inserts the optical disk information into the destination Storage Library server database.
- Updates the surface locator table to point to the new location of the optical disk.

- Deletes the optical disk information from the source Storage Library server database where the disk previously resided.

Procedure

To run the move_disk utility:

1. Eject all disks to be moved from the Optical Disk Library as described in the "Storage Library Control" chapter of the *IBM FileNet Image Services System Administrator's Handbook*. To download the document from the IBM support page, see "ibm.com and related resources" on page v.

2. Run the move_disk utility from the source Storage Library server attached to the Optical Disk Library where the disks currently reside. Enter:

   `move_disk surfid 1 ... surfid n dest_server_name`

   where *surfid 1 ... surfid n* represents the surface ids and *dest_server_name* represents the server id of the Storage Library server attached to the Optical Disk Library to which you want to move the disks.

3. Insert the disks into the Optical Disk Library attached to the destination Storage Library server using Storage Library Control (SLC). This is described in the "Storage Library Control" chapter of the *IBM FileNet Image Services System Administrator's Handbook*. To download the document from the IBM support page, see "ibm.com and related resources" on page v.

Deleting a storage library server

You can delete a Storage Library server using the del_osvr utility. This utility removes a Storage Library server from a system and moves references to the optical disks from the deleted Storage Library server to a remaining Storage Library server.

About this task

The del_osvr utility does the following:

- Checks the Storage Library servers for documents not written yet. If it finds any unwritten documents, it notes the problem and terminates. You must then either start the Storage Library server and let it finish the outstanding write_requests, or run WRT_clean to remove them. See the *IBM FileNet Image Services System Tools Reference Manual* for information about WRT_clean. To download the document from the IBM support page, see "ibm.com and related resources" on page v.

- Copies all optical disk database information from each Storage Library server to be deleted to the destination Storage Library server. It then deletes this information from the Storage Library server being deleted.

- Updates the family disk information on each deleted Storage Library server to remove all current, future, and previous write surfaces. It adds this information to the destination Storage Library server so that partially full disks will continue to be written. If a partially full disk cannot be added to the destination family's current surfaces because the current surface array is full, a message is logged to the system error log.

- Updates the surface locator and family locator tables. If only one Storage Library server remains, the entries in the surface and family locator tables are deleted. If multiple Storage Library servers remain, the pointer in the surface locator table is changed to point to the destination Storage Library server, and the pointer to the deleted Storage Library server in the family locator table is removed. Optical disks assigned to deleted Storage Library servers will be assigned to the

destination Storage Library server. However, families referencing a deleted Storage Library server will have that reference removed, but will not have a reference to the destination Storage Library server explicitly added. Also, if all the servers referenced by a family are deleted, that family will be changed to reference all remaining Storage Library servers.

Run the del_osvr utility from the source Storage Library server (the server that you are deleting) to update the permanent and transient MKF databases on each Storage Library server with the necessary changes.

Procedure

To use thedel_osvr utility:

1. Backup the system to tape.

    Important: If you get partially through deleting a Storage Library server and have a problem, restoring the backups is the only way to return to the original state. There is no other program that can undo an uncompleted attempt to delete a Storage Library server.

2. Verify that there are no pending write requests for the Storage Library servers to be deleted. If there are, delete them.

3. Eject all disks to be moved from the Optical Disk Libraries of the Storage Library server to be deleted.

4. Stop the IBM FileNet Image Services software on all Storage Library servers by entering:

    ```
    initfnsw  stop
    ```

5. Run the fn_util startdb tool on every Storage Library server to start up the permanent and transient databases by entering the following command:

    ```
    fn_util  startdb
    ```

6. On each server, enter a command similar to the following:

    ```
    del_osvr  svrid1 svrid2 ... svridndest_server_num
    ```

    svrid1 svrid2 ... svridn are the server ids of the Storage Library servers to be deleted, and <dest_server_num> is the destination Storage Library server to move information to from the Storage Library servers being deleted.

    Tip: If the Storage Library server on which optical disks are referenced is not correct, or the Storage Library server's families referenced are not the desired ones after you run the del_osvr utility, you can run the move_disk utility to move optical disks, and you can also run database maintenance to change families.

7. After del_osvr is completed, run fn_edit on the Root server to delete the Storage Library server. Be sure to delete the logical cache allocation before removing the station.

8. In Xapex, use Database Maintenance to re-save all media families, and resolve any warning or error messages that appear by adding or changing the preferred library information to match the current storage library configuration.

Begin production mode for the storage library server

The Storage Library server is now ready for production.

Appendix C. Troubleshooting the installation program

If you encounter any problems during the IBM FileNet Image Services software installation, see the following problems and solutions for additional help.

Problem

Some of the FileNet Image Services files did not copy onto the server correctly.

Solution

Verify that all FileNet Image Services-related programs are shut down.

```
/fnsw/client/bin/wal_purge
```

Then run the installation again.

Problem

On a Solaris server, none of the FileNet Image Services files are copied.

Solution

Make sure you have the latest Solaris patches installed. You can download the latest patch cluster from the Oracle website. Install the patches, restart the server, and then run the installation again.

If the latest Solaris patches are already installed on the server, and you are installing the FileNet Image Services from CD-ROM media, the Volume Manager Daemon (**vold**) might be the cause. Whenever a CD is loaded, this daemon starts and automatically mounts the CD. However, **vold** might also interfere with the copying of files. Follow these steps to terminate and restart **vold**, and then run the installation:

1. Remove the FileNet Image Services media from the drive.
2. Terminate the **vold** process by entering:

   ```
   kill -TERM ProcessID
   ```

   Where *ProcessID* is the process ID of **vold**
3. Restart the **vold** process by entering:

   ```
   vold &
   ```
4. Insert the software media into the drive.
5. Run the FileNet Image Services installation program again.

Problem

After I start the FileNet Image Services installation program on my server, I get this cryptic message:

```
Unable to load input file: /tmp/isj92q67a/jvm
```

Solution

You might be logged on as fnsw or some other user. The installation program must be run as the root user. Log on as root user and run the installation again.

Problem

In Graphical mode, the Welcome screen does not display.

Solution

Verify that the DISPLAY environment variable has been set correctly. If you used the su command to log on as root user, the *DISPLAY* variable might not be correct.

1. Check the *DISPLAY* variable by entering:

   ```
   echo $DISPLAY
   ```

2. Examine the *DISPLAY* setting. Verify that the variable is set to 0:0 to display on your local monitor. If you are installing FileNet Image Services remotely on another server, the *DISPLAY* variable on that server must be set to direct the display to the server you are working from.

Problem

The FileNet Image Services installation program cannot find enough temporary space to proceed with the installation. In Graphical mode, a message displays on the screen and is logged in the log file. In Silent mode, the installation program returns to the command prompt and no log file is created.

Solution

Locate another directory that has the amount of space you need. Then redirect the installation program to that directory by setting the *IATEMPDIR* environment variable to that alternate directory. The alternate temporary directory must be outside the /fnsw directory structure. For example, you might enter:

- In the Bourne shell:

  ```
  IATEMPDIR=/othertemp
  export IATEMPDIR
  ```

- In the Korn shell:

  ```
  export IATEMPDIR=/othertemp
  ```

- In the C shell:

  ```
  setenv IATEMPDIR /othertemp
  ```

Where */othertemp* is the full file path to the alternate temporary directory.

After you set the *IATEMPDIR* variable, run the installation program again.

Problem

The FileNet Image Services installation terminates with the following exception message:

```
This Application has Unexpectedly Quit: Invocation of this Java Application has caused
an InvocationTargetException. This application will now exit. (LAX)
```

This error occurs because the *DISPLAY* environment variable might have been set to an empty string, which causes the installation program to default to console mode. For example, the following commands were run:

```
export DISPLAY

run <installer binary>
```

where the *<installer binary>* is the installation program file such as *./is_4.2.0_aix.bin*

Solution

Set the *DISPLAY* environment variable and then restart the installation program by doing the following steps:

1. Reset the *DISPLAY* environment variable by entering either of the following commands:

   ```
   unset DISPLAY
   ```

   or

   - In the Bourne shell, enter:

     ```
     DISPLAY=<host_identifier>:0
     export DISPLAY
     ```

   - In the Korn shell, enter:

     ```
     export DISPLAY=host_identifier:0
     ```

   - In the C shell, enter:

     ```
     setenv DISPLAY host_identifier:0
     ```

   where *host_identifier* is the server identifier, either a name or an IP address.

2. Start the installation program in console mode by entering:

   ```
   <installer binary> -i console
   ```

   where *<installer binary>* is the installation program file such as *./is_4.2.0_aix.bin*.

Problem

On Solaris servers in console mode, the Choose Locale list does not correctly display language names that contain special characters because the locale is not correctly set. For example, the following messages are displayed:

```
# ./is_4.1.3_sun.bin -i console
Bad string     <<<<<------------
Preparing to install...
Extracting the JRE from the installer archive...
Unpacking the JRE...
Extracting the installation resources from the installer archive...
Configuring the installer for this system's environment...

Launching installer...

Warning: Missing charsets in String to FontSet conversion     <<<<<------------
Warning: Missing charsets in String to FontSet conversion     <<<<<------------
Preparing CONSOLE Mode Installation...
```

Solution

The console installer locale is correctly displayed when the LANG environment variable is set to `en_US.ISO8859-1`.

To set the *LANG* environment variable

- In the Bourne shell, enter:

```
LANG=language
export LANG
```

- In the Korn shell, enter:

```
export LANG=language
```

- In the C shell, enter:

```
setenv LANG language
```

where *language* is the regional language (locale) in which you want your server to operate.

Appendix D. Installing FileNet Image Services in non-English Environments

IBM FileNet Image Services supports several languages for installation, configuration, error reporting, and indexing.

Refer to the *IBM FileNet Image Services System Administrator's Handbook* for setting the supported language preference for the operating system, databases, and the FileNet Image Services software.

Appendix E. Uninstalling FileNet Image Services

Procedure

To uninstall the FileNet Image Services software:

1. Verify that you are logged on with root privileges.
2. Stop the FileNet Image Services software.
3. Back up any log files or other data in the `/fnsw` and `/fnsw/local` directories that you want to save.

   Tip: Unless you specify otherwise, the uninstallation program uses the same mode that you used during the installation. For example, if you installed FileNet Image Services using Silent mode, the uninstallation program automatically defaults to Silent mode, too, even if you do not specify the **silent** option.

4. Change to the root directory and run the uninstallation program. The uninstallation program defaults to the same mode that you used for installation, unless you choose a different mode. Enter:

   `cd /`

   - Graphical mode

     `/fnsw/IS_uninstaller/uninstall_is.bin -i gui`

   - Console mode

     `/fnsw/IS_uninstaller/uninstall_is.bin -i console`

   - Silent mode

     `/fnsw/IS_uninstaller/uninstall_is.bin -i silent`

   Important: You must use the uninstall_is.bin command to uninstall the FileNet Image Services software. You cannot use the operating system tools to remove FileNet Image Services.

   Uninstalling FileNet Image Services also uninstalls the Tivoli GSKit modules from the /fnsw/lib/shobj/tiv directory. The Tivoli GSKIT contains cryptographic libraries that are used by FileNet Image Services to provide compliance with Federal Information Processing Standards (FIPS 140-2).

5. The uninstallation program leads you through the necessary steps and prompts you when it is finished.

   Tip: The uninstallation program leaves certain critical directories intact to protect existing data.

6. After the uninstallation program has finished, go to the `/fnsw` directory and examine the remaining contents. Manually remove any unwanted files (such as the uninstall-output.txt file) and directories.

Appendix F. Guidelines for servers with high server stub usage

Servers can run out of operating system resources if they use a high number of server stubs. The COR_Listen process reports a "System out of resource" message in the elog when it tries to start more server stub processes than the operating system allows.

About this task

COR_Listen places the following WARNING message in the elog:

```
155,18,215<fnsw>COR_Listen -pt -s32769 -t3600 -d100
(2830478.25444.300 0x2b308e.6364) ... [WARNING]
COR_Listen: pthread_created() failed, err=11.System out of resource.
Please contact system administrator or upgrade your system!
```

One master COR_Listen process creates each server stub that is configured in the /fnsw/etc/serverConfig or /fnsw/etc/serverConfig.custom file, rather than creating a separate COR_Listen process for each server stub process. Thus, the master COR_Listen process uses operating system resources differently than in earlier FileNet Image Services releases. If you receive the "System out of resource" message, consider changing your operating system configuration settings with this usage in mind.

Procedure

To avoid this system resource problem:

1. Configure your operating system settings to accommodate your usage according to the following table. The kernel settings are not hard requirements and might vary depending on your usage of both FileNet Image Services and non-FileNet Image Services processes. The "Total number of stubs" column is the number of concurrent server stubs in use and configured in the /fnsw/etc/serverConfig file.

Table 24. Guidelines for servers with high server stub usage

Total number of stubs	ulimit data (MB)	Kernel Guidelines
900	unlimited	ndd -set /dev/tcp tcp_conn_req_max_q 2000
		ndd -set /dev/tcp tcp_conn_req_max_q0 2000
		ulimit -n 1024 (ulimit -n returns "nofiles(descrptors) 1024". Set for the fnsw user.)
		project.max-msg-ids 3072 (configured in projects)
		set rlim_fd_max=4096 (configured in the /etc/system file)
		set rlim_fd_cur=1024

2. Your changes go into effect the next time you restart the server.

Appendix G. Support for PCI-X dual channel Ultra320 SCSI (LVD/SE) adapter

Some HP optical libraries have been found to have specific issues when configured on Solaris 10 using the PCI-X Dual channel Ultra320 SCSI (LVD/SE) Adapter.

This configuration works correctly on Solaris 9 and diagnostic information has been submitted to Sun service. A patch was not yet available at the time of this release, but there is a work around for each of the following two issues:

Creation of invalid device links

Each time Solaris 10 is restarted with the reconfigure flag (boot -r) or the /reconfigure file exists on restart, Solaris 10 will recreated all the device links. This is typically only used when new hardware is added or changed. Solaris 10 has been shown to consistently create invalid device links on reconfigure restart with attached HP optical libraries.

About this task

These invalid device links are associated with device LUNs that do not exist.

The following is a sample list of the /dev directory for optical device fnsod which has an invalid device entry.

```
ls -al /dev/fnsod*
lrwxrwxrwx 1 root sys 49 May 18 09:46 /dev/fnsod.8,11,3,0
-> ../devices/pci@8,600000/scsi@1,1/SOD@3,0:8,11,3,0
lrwxrwxrwx 1 root sys 49 May 18 09:46 /dev/fnsod.8,11,4,0
-> ../devices/pci@8,600000/scsi@1,1/SOD@4,0:8,11,4,0
lrwxrwxrwx 1 root root 49 May 22 11:28 /dev/fnsod.8,11,4,1
-> ../devices/pci@8,600000/scsi@1,1/SOD@4,1:8,11,4,1
```

In this case, the device fnsod.8,11,4,1 is an invalid device. You would know this by understanding what devices actually exist on a given system. You can find this information from the control panel on the optical library. In this sample case the device arm is device id 3 Lun 0, and the disk drive is id 4 Lun 0, and id 4 Lun 1 is not a valid device.

The solution to this problem is to remove and recreate the device links by hand.

Procedure

To remove and recreate the device links:

1. Log on as a user with root privileges and issue the following commands.

   ```
   # rem_drv fnsod
   # rm /dev/rnsod*
   # rm /dev/SOD*
   # /fnsw/bin/fnsod.install
   ```

2. You should see the following output which shows only the correct devices were created.

   ```
   Beginning fnsod.install script

   No match
   ```

```
Driver (fnsod) not installed.

No match

-rw-r--r-- 1 root sys 2584 May 22 15:01 /kernel/drv/fnsod.conf

-rwxr-xr-x 1 root sys 132727 May 22 15:01 /kernel/drv/sparcv9/fnsod

Driver (fnsod) installed. Devices:

/dev/fnsod.8,11,3,0 /dev/fnsod.8,11,4,0
```

Error following fix of invalid device links

There is also a problem when IBM FileNet Image Services starts after the invalid device links are fixed.

About this task

The FileNet Image Services software receives an error in the log when attempting to open the library. This is a sample error.

```
FCL: unexpected errno 3 performing open_device operation on file: /fnsw/dev/1/oddb1
```

The solution for this problem is to create a /kernel/drv/mpt.conf file that specifically configures the Ultra320 driver to force a bus width of 8 bits. This will not be a problem because these optical libraries can only work in 8 bits and an attempt to negotiate 16 bits is causing the problems.

Procedure

To create the/kernel/drv/mpt.conf file:

1.

2. Use the touch command to create the /kernel/drv/mpt.conf file. As a user with root privileges, enter the following command: touch /kernet/drv/mpt.conf

3. Use your preferred text editor, such as vi, to add the following lines to the mpt.conf file:

   ```
   name="mpt" parent="/pci@8,600000"

   unit-address="4"

   target1-scsi-options=0x58

   scsi-options=0x178 scsi-initiator-id=7;
   ```

4. Change the parent="/pci@8,600000" to match your specific device. To find this device name, enter the command: ls -al /dev/SOD*

   This is the output that matches the sample mpt.conf file.

   ```
   lrwxrwxrwx 1 root sys 45 May 22 15:02 /dev/SOD.0 -> ../

   devices/pci@8,600000/scsi@1,1/SOD@3,0:osar

   lrwxrwxrwx 1 root sys 44 May 22 15:02 /dev/SOD.1 -> ../

   devices/pci@8,600000/scsi@1,1/SOD@4,0:odd
   ```

   The mpt.conf file must be owned by a user with root privileges. You can use the following commands to change ownership of the mpt.conf file.

   ```
   chown root /kernel/drv/mpt.conf
   chgrp root /kernel/drv/mpt.conf
   ```

Appendix H. Sun multicultural keyboard support

Set up a Sun SPARC- or UltraSPARCstation with a Type 5 keyboard so that you may enter characters for any of the supported languages.

The following prerequisites must be met to complete the multicultural environment setup:
- You must have a Sun SPARC- or UltraSPARCstation with a Type 5 keyboard.
- You must be running the OpenWindows 3.3 (or higher) application on the station.
- You must have installed the Feature Package (for the locale in which you intend to run) on your SPARC- or UltraSPARCstation.

See your Solaris documentation for in-depth instructions for setting up the server for National Language Support.

Important: Typically, the Sun SPARC- or UltraSPARCstation is configured with a Type 4 keyboard. You must order the Type 5 keyboard separately. You may perform the steps in this appendix on any SPARC- or UltraSPARCstation; however, only the Type 5 keyboard supports imaging software.

Configuring the Solaris server

Configure your Sun SPARC or UltraSPARC station for a non-English environment.

Procedure

To configure the Solaris server:

1. The default locale installed (as part of the operating system installation) is English (locale "C"). Select the Alternate Language option from the Custom Install Configuration menu during the installation of the operating system to specify which of the available system-wide translations are installed in addition to the default locale.

   Note: See the section discussing Locale in the System Configuration and Installation Guide (depending on the version of Solaris that is installed) for instructions on how to install alternate languages.

2. Verify that the Feature Package, for the locale in which you plan to run, is installed. For example: the Japanese Feature Package (JFP) for Japan, the Korean Feature Package for Korea, and others. These packages consist of extensions for Solaris and incorporate numerous facilities for handling local linguistic and cultural conventions.

   Verify that the following directory exists:

3. Verify that the following directory exists:

   `/usr/openwin/lib/locale/locale`

   where *locale* is the language in which you want to run. For example: de (German), fr (French), and so on.

   If this directory does not exist, see the OpenWindows translated feature packages for the specific language, or ask your Sun system administrator install the package.

4. Verify that the following lines are in the ~/.Xdefaults and ~/.OWdefaults files:

```
OpenWindows.Basic Locale
OpenWindows.DisplayLang
OpenWindows.InputLang
OpenWindows.NumericFont
OpenWIndows.TimeFormat
```

   If the entries do not exist, see the section that discusses Locale in your Solaris documentation for instructions.

5. If you need a particular font for a particular locale, you can make the font available by adding locale-specific font resources to the ~/.Xdefaults file, as follows:

```
OpenWindows.RegularFont.locale fontID
OpenWindows.BoldFont.locale fontID
OpenWindows.MonospaceFont.locale fontID
```

   where *locale* is the basic local setting and *fontID* is the font or font set.

6. Set up the LANG variable in your shell environment files by using your preferred editor. From your .HOME directory, edit the necessary files by completing one of the following:

   Important Verify that the language you select here matches the language that was selected when the relational database software was installed.

   • For sh and ksh, add the following lines to your .profile file:

   ```
   LANG=language
   export LANG
   ```

   where *language* is the language (locale) in which you want your server to operate.

   • For csh, add the following line to your .login file:

   ```
   setenv LANG language
   ```

   where *language* is the language (locale) in which you want your server to operate.

7. To use 8-bit characters, change the locale of the Solaris operating system for the appropriate language. However, European locales require the installation of translated feature packages.

   a. If these feature packages are not available to you, use the following workaround:

      • In csh shell, enter:

      ```
      setenv LC_CTYPE iso-8859_1
      ```

      • In sh shell, enter:

      ```
      LC_CTYPE=iso_8559_1
      export LC_CTYPE
      ```

      Important: Do not set the LANG environment variable to ISO_8859_1. The ISO_8859_1 is not a valid setting for the OpenWindows locale X resources. The ISO_8859_1 setting is not a full locale setting, but a setting for the LC_CTYPE category only.

   b. Set the terminal port to allow 8-bit processing for applications (like Command Tool or Shell Tool) by entering:

   ```
   /usr/bin/stty cs8
   /usr/bin/stty -istrip
   ```

      You can insert these settings in your .login (for csh) or .profile (for sh) file.

   c. If they exist, remove the following resources from the ~/.Xdefaults or ~/.OWdefaults file:

```
OpenWindows<Basic Locale>
 OpenWindows<DisplayLang>
 OpenWindows<InputLang>
 OpenWindows<NumericFont>
 OpenWindows<TimeFormat>
```

Configuring the Type 5 keyboard

The Type 5 keyboard can be configured (through DIP switch settings) for various
European and Asian support. It can also be configured to function as a Type 4
keyboard.

See your Solaris documentation for detailed instructions for setting up the
keyboard, or have your Sun system administrator set it up.

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This product incorporates technology covered by one or more of the following
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