



# Image Services

## Installation & Configuration Procedures for the Solaris<sup>®</sup> Operating System

Release 4.0 DB2 Edition

9844115-001

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# 1

## Getting Started

This document explains how to install and configure version 4.0 DB2 Edition of FileNet Image Services software on a SUN Microsystems SPARC or UltraSPARC based servers running version 9 of the Solaris® Operating System.

### Overview

You can use the software installation and configuration procedures in this document to perform the following server-related tasks:

- Installing and configuring Image Services on either a Combined server system, Dual servers System, or Remote Entry System (RES)



- Adding a single Storage Library server to an existing Root/Index server
- Installing and configuring multiple Storage Library servers on an existing system
- Installing and configuring (adding services) an Application server to an existing system

---

**Tip** Reconfiguring an existing server should be handled the same as installing and configuring a new server.

---

## Required Skills

The software installation and configuration procedures described in this document must be performed by a **FileNet Certified Professional (FCP)**. To learn more about the FCP certification program, please refer to FileNet's Web site at <http://www.filenet.com> under Products > Services & Support > Global Learning Services. FileNet Professional certification is available to FileNet customers, FileNet

employees, FileNet partners, and other Technical Service Providers (TSP).

At least **seven days** prior to the installation, the FCP must contact the Upgrade/Install Assurance Team to schedule the installation and access the team's latest list of current scheduling procedures.

The procedures included in this document assume that you possess the following knowledge:

- An understanding of UNIX and the Solaris Operating System fundamentals
- An understanding of the Solaris administration utilities (such as **admintool**)
- An understanding of peripheral device (for example tape drives, printers, or optical disk systems) configuration methods
- An understanding of Solaris and Veritas disk and file system configuration methods, and an understanding of general logical volume management concepts

## Documentation Conventions

We have tried to make this procedure easy to follow, whether you're a new or experienced technician. The organization and format of this procedure are designed to clarify the tasks you are about to perform.

To familiarize yourself with the conventions used in this document and for other general information, link to the [\*\*\*Documentation Conventions\*\*\*](#) file on the Image Services documentation CD.

## New Features of the IS 4.0 DB2 Edition Installation

This release of Image Services includes some changes you need to be aware of when installing the new software.

## IBM DB2 Universal Database Software

In this release of Image Services, FileNet introduces support for IBM DB2 Version 8.1. The DB2 databases are site-controlled and must reside on remote AIX 5.2 servers. Image Services on the Sun server accesses the remote DB2 database by using DB2 client software installed on the IS server.

DB2 Universal Database Version 8 FixPak 4a or later is also required.

See [\*\*\*Guidelines for Installing and Configuring DB2 Software\*\*\*](#) for more information.

## CSS Worldwide Customer Support

The following sub-sections describe various support documents and tables that will give you additional, up-to-the-minute information concerning your installation. These are all available on the FileNet Web site at <http://www.css.filenet.com>. Login to CSS Worldwide Customer Support to review these topics.

## Release Notes for Image Services 4.0 DB2 Edition

The **Release Notes** are available in two places.

The latest Release Notes file can be retrieved at any time from the FileNet Web site.

The Release Notes are also located on the CD-ROM **FileNet Image Services 4.0 DB2 Edition** in two formats: **/relnote.html** and **/relnotes.txt**.

Since the latest Release Notes are located on the FileNet Web site, it is **highly recommended** that you obtain the Release Notes file from that location instead using the file on the IS 4.0 CD-ROM.

The **Release Notes** contain valuable information you need to install and configure the Image Services software. Do not start the update without first reading the **Release Notes**.

Pay special attention to the “**Patches**” mentioned in the Release Notes. (Search for the keywords **PRE-INSTALL** and **REQUIRED** to locate information about Solaris, DB2, and Image Services patches

that need to be applied before starting this installation.) Image Services patches are located on the FileNet Web site.

## Operating System Notes

Review the Operating System Notes for your current version of Solaris to determine if any patches need to be installed prior to this Image Services installation. The System Administrator is responsible for obtaining and installing these patches. The Operating System Notes are available on the FileNet Web site <http://www.css.filenet.com> and log into Customer Service & Support. Click on:

### **Product Tech Info**

#### **Image Manager**

#### **Image Services**

#### **Compatibility & Dependency**

#### **IS 4.0.x**

Select your version of the Solaris Operating System from the list, and review the patch recommendations and requirements.

## Release Dependency Spreadsheet

Review the Image Services Release Dependency spreadsheet for information that might be pertinent to the entire system configuration. The Release Dependency spreadsheet contains software compatibility information for client workstations, fax servers, and printer servers.

You may see this spreadsheet referred to as the Support Matrix or the Compatibility/Dependency Matrix.

---

**Note** When running Image Services and the Image Services Toolkit (formerly known as WAL) on the same server, the Image Services Toolkit 3.6 or later is required .

---

## Installation Prerequisites

The prerequisites for an installation are outlined in the following sections. You will be asked to gather specific information in the following sections. After you find each piece of information, enter it in the appropriate space in the **[“FileNet TC Worksheet” on page 69.](#)**

**Server Types**

This section and its sub-sections need to be performed on both the Root/Index server and the Storage Library server during a Dual server install, or on the Root/Index/Storage Library server during a Combined or Entry server install.

---

## Minimum Hardware Requirements

### Server Architecture

- SUN Microsystems SPARC- or UltraSPARCserver (32-bit or 64-bit processors)
- A CD-ROM drive installed and configured for use on your SUN server

### Server Memory

- Root/Index and Application Servers with DB2:  
**256 MB memory or more for each processor in the server.**
- Storage Library and Application Servers:



## 256 MB memory or more for each processor in the server.

Use the following commands to check your system requirements.

System Item	Command
RAM	<code>prtconf   grep Memory</code>
Free Disk Space in KB	<code>df -k</code>

### Total Swap Space

Recommended swap space is **2 times** the amount of server memory.

However, if the server has more than 1 GB of server memory, we recommend that swap space be **1.5 to 2 times** that amount.

### Total Disk Space

For Image Services software and minimum datasets only:

- At least **1.0 GB**

This size includes a 30% growth factor, but does not include space required for the Solaris Operating System or for RDBMS software.

### **Available File System Space for FileNet Software**

The FileNet software needs the minimum amount of free disk space in the file systems shown here to install the Image Services software.

- **500 MB** total space in /fnsw
- **500 MB** total space in /fnsw/local

### **Space for RDBMS Software**

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

Refer to vendor's documentation for additional information about space requirements for RDBMS software products.

Refer to the [\*\*\*Guidelines for Installing and Configuring DB2 Software\*\*\*](#) for more information about space requirements for DB2 software.

FileNet's SCoUT system configuration and output tool can help estimate the actual amount of disk space needed for FileNet and DB2 datasets on this Image Services system.

## Software Requirements

You must have the following items to complete this Image Services software installation procedure.

### Server Naming Convention

Properly naming Image Services servers is an important step when setting up your Image Services system. Server names can have a maximum of **20 characters** and should only contain ASCII alphanumeric characters and hyphens.

---

**Note** Non-alphanumeric and underscore characters should not be used.

---

Every system resource is identified by a three-part name stored in the NCH database. 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, two for the colons separating the parts.

### Object Name

An **object** is a resource like a tape, printer, database, software service, logon name, etc. Some objects have names predefined by the system. For example, DefaultIMS is the name used to access the index database.

### Domain Name

The **domain** (or system) name is set up at FileNet system configuration time using the **fn\_setup** tool. In a multi-server 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. This can be your company or department name, such as ABCDEnterprises or FileNetAccounting.

#### 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, two for the colons.

The reason for this convention is that when NCH (Network Clearing House) has to cross a router to find a server, it converts the domain name to an IP host name using specific criteria, one of which is dropping the underscore character. In fact, all non-alphanumeric and underscore characters are eliminated.

---

## Solaris Operating System

Your server must already be running the following Solaris release:

- Solaris® version 9 Operating System 08/03 release (32-bit or 64-bit)

For running DB2 graphical tools:

- On 32-bit Solaris, Java Runtime Environment Version 1.3.1.
- On 64-bit Solaris, Java Runtime Environment Version 1.4.0.

The DB2 Java graphical tools are not provided with DB2 Version 8.1 Run-Time Client.

## TCP/IP Address

Image Services software requires that the server have a static IP address. Verify that a specific IP address has been assigned to the server. Use of a dynamic IP address (DHCP) is not supported.

## Debugging Software

Debugging software is required for Image Services 4.0 DB2 Edition and must be installed on each Image Services server. A debugger enables FileNet support personnel to troubleshoot both FileNet and Solaris-related problems.

To determine if the debugger is already installed, enter the following command on each server:

```
pkginfo | grep SPROdbx
```

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

---

**Note** The debugger is included with Solaris SPARCworks Pro C v4.0.

---

Or you may wish to consider installing the **gdb 5.0** debugger, which is included with Solaris 9 as freeware on the *Solaris Software Com-*

*panion CD, Update 2/02*. The CD image (s8ccd-2\_02-sparc.iso.zip) can be downloaded from Sun's Web site at <http://www.sun.com>.

Contact your Sun representative for other options that may be available.

### **Common Desktop Environment (CDE)**

The Common Desktop Environment is a graphical user interface that runs in conjunction with the X Windows System. Much like X Windows, CDE automatically opens an Error Log window and a FileNet DT term window when you logon.

---

**Note** To disable CDE and use X Windows instead, refer to your Operating System documentation. If you want to re-enable CDE in the future, you can run the following script as **root** user:

**`/fnsw/etc/DTwindows.`**

---

Although the Solaris Operating System supports the Common Desktop Environment, the procedures in this document are written for use in an ACSII/X Window environment for the sake of consistency. (Refer to



your operating system documentation for more information on using CDE.) Non-GUI commands can be performed at either the GUI terminal or the ACSII terminal.

### Image Services Software

- **FileNet Image Services 4.0 DB2 Edition for Sun Solaris** (CD-ROM). This media contains the Image Services 4.0 DB2 Edition software including COLD 4.0 software.

### IBM DB2 Universal Database Software

#### For the DB2 Database Server:

- **IBM DB2 V8.1.0** (1 CD). **DB2 UDB Enterprise Server Edition (ESE) for AIX 5L**. This compact disk contains the IBM DB2 RDBMS software for the DB2 database server.
- **IBM DB2 Universal Database Version 8 FixPak 4a** or later. (download from IBM's Web site, [www.ibm.com](http://www.ibm.com).)

**For the Image Services Server:**

- **IBM DB2 V8.1.0** (1 CD). **DB2 UDB Administration /Runtime Client for Solaris 9**. This compact disk contains the IBM DB2 RDBMS software for the DB2 client on the Image Services server.
- **IBM DB2 Universal Database Version 8 FixPak 4a** or later. (download from IBM's Web site, [www.ibm.com](http://www.ibm.com).)

---

**Note** IBM DB2 software media are not supplied by FileNet.

---

**Volume Management Software Media**

Volume management software is included with several Sun/Solaris products or it may be purchased separately.

- VERITAS Volume Manager 3.x for Solaris - available from Sun or directly from Veritas. Included with Sun StorEdge disk arrays.

## National Language Support

This release of Image Services provides additional information on using character sets other than US7ASCII and ISO 8859-1. It's extremely important that the character set you select for one product matches the character sets you select for all the others.

For example, when you install the operating system, be sure to select the character set you plan to use with Image Services and DB2. Likewise, when you install DB2 software, be sure to select the same character set as you did for the operating system.

And when you install the FileNet Image Services software, be sure to select the appropriate character set on both the System Attributes tab in the System Configuration Editor and on the Relational Databases/DB2 tab.

Later, when you create indexes, document classes, and media families, you'll be able to use the appropriate alphanumeric characters for your locale.

**Note** 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 DB2 and IS on the Image Services server.

---

For FileNet systems configured with Western European character sets, valid alphanumeric characters must be in the 7-bit ASCII range. For FileNet 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.

The following table summarizes FileNet support for both ISO and MS single-byte character sets.

Table 1-1: Character Sets

Character Sets			Decimal Values	
ISO (International Organization for Standardization)		Microsoft Windows Code Page	ASCII (0 to 127)	Non-ASCII (128 to 255)
Western European	8859-1	CP 1252	Yes	<b>No</b>
Eastern European	8859-2	CP 1250	Yes	Yes
South European	8859-3	**	Yes	Yes
Northern and North- eastern European	8859-4	CP 1257	Yes	Yes
Latin/Cyrillic	8859-5	CP 1251	Yes	Yes
Latin/Arabic	8859-6	CP 1256	Yes	Yes
Latin/Greek	8859-7	CP 1253	Yes	Yes
Latin/Hebrew	8859-8	CP 1255	Yes	Yes

Table 1-1: Character Sets

Character Sets			Decimal Values	
ISO (International Organization for Standardization)		Microsoft Windows Code Page	ASCII (0 to 127)	Non-ASCII (128 to 255)
Western European and Turkish	8859-9	CP 1254	Yes	Yes
North European	8859-10	**	Yes	Yes

\*\* Microsoft does not have character set code pages that correspond to ISO 8859-3 and ISO 8859-10. If your FileNet Image Services system configuration includes Microsoft Windows clients or workstations, be sure to choose an ISO character set for DB2 and Image Services that has a corresponding Windows code page.

## Related Documentation

The following documents contain information related to the installation of Image Services on Sun/Solaris. Locate these documents on the FileNet documentation CD-ROM, and print or read them before you install the Image Services software.

- [\*Image Services System Administrator's Handbook\*](#)
- [\*Image Services System Administrator's Companion for UNIX\*](#)
- [\*Enterprise Backup and Restore User's Guide\*](#)

# System Administrator Tasks

## System Administrator Checklist

The following checklist summarizes the tasks detailed in this chapter which the **System Administrator** is responsible for completing.

1.  Check Server Memory
2.  Check Solaris Version
3.  Check Kernel Limits
4.  Verify National Language Character Set
5.  Add Peer Systems to the /etc/hosts File
6.  Create FileNet Users and Groups
7.  Install Volume Management Software
8.  Create Logical Volumes for Image Services
9.  Set Up Links for Image Services

Peer Server Name(s) and Address(es):

---



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

## Operating System Requirements

### Server Types

---

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

---

Log on as **root** user to check or gather the information in this section.

### Check Server Memory

You need to make sure the server has the appropriate amount of RAM:

**256 MB** or more memory for each processor on Root/Index servers or Application servers with DB2.

**256 MB** or more memory for each processor on Storage Library servers or Application servers.

To determine the total amount of installed memory, enter on each server:

**prtconf | grep Memory**

Enter the server's memory in the [“FileNet TC Worksheet” on page 69](#).

## Check Solaris Operating System Version

Your server must already be running the following Solaris release:

- Solaris<sup>®</sup> version 9 Operating System (32-bit or 64-bit)

## Check the Operating System Kernel Limits

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

- 1 Make a copy of the **system** file (with a new name). Logon as **root**, 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.)

---

**CAUTION**

Use extreme care when entering the commands shown below. Entering some of the settings incorrectly may cause general system errors.

---

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

```
set semsys:seminfo_semmsl=512
set semsys:seminfo_semopm=256
set semsys:seminfo_semume=500
set semsys:seminfo_semvmx=32767
set semsys:seminfo_semaem=16384
set shmsys:shminfo_shmmax=268435456
set shmsys:shminfo_shmmin=0
set shmsys:shminfo_shmmni=2000
set shmsys:shminfo_shmseg=100
set msgsys:msginfo_msgmni=2048
set max_nprocs=1000
set fnsod:sod_Debug=0
set rlim_fd_max=1024
set rlim_fd_cur=256
```

DB2 also requires these settings:

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

**Note** The **shmmax** setting (maximum amount of shared memory) you choose should not be larger than the amount of swap space you configured earlier. The swap space must be at least 1.5 to 2 times the amount of server memory. The minimum **shmmax** value shown above (268435456) is equivalent to only 256 MB.

---

**Note** The **set rlim\_...** lines above are intended to maximize system performance by setting the file limit descriptor values to appropriate levels.

---

- 4 Save your changes.
- 5 Edit the `/etc/logindevperm` file, using your preferred editor (such as, **vi**):

```
vi /etc/logindevperm
```

- 6 Append the following line to the end of the file:

```
/dev/console 0666 /dev/console
```

**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.

---

- 7 Exit the file and save your changes.

## Verify National Language Character Set and Time Settings

The 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 IS 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. 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.

The LC\_TIME setting must be configured for the entire system, so change the /etc/profile file (or each users' .profile file) to include the following lines:

```
LC_TIME=C  
export LC_TIME
```

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 should be:

```
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 should look like this:

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

Note that "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.



## Start Solaris X Windows (if necessary)

---

**Server Types** Perform the steps in this section on **all servers**.

---

**Note** If X Windows or CDE is already running, you can skip this section.

---

- 1 Logon the server as **root** user, and start the Solaris X Windows environment by entering the following command:

**`/usr/openwin/bin/openwin`**

X Windows starts immediately.

---

**Tip** When necessary, you may use the built-in text editor provided with the Solaris 9 Operating System until you install the Image Services software.

After the Image Services software is installed, **DO NOT** attempt to start X Windows using the command shown above.

---

## Add Peer Systems to the /etc/hosts File

### Server Types

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

If this server uses DNS (Domain Name Service) or NIS (Network Information Service), the steps in this section are not needed. Contact the network administrator for further information. Skip to the section, **“Install Volume Management Software” on page 58.**

---

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, you must verify that the name and address of your host is included in the /etc/hosts file on your system.

- 1 Logon as **root** user.
- 2 Edit the /etc/hosts file, using your preferred editor (for example, **vi**):

**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 software will not work.
- 4** Also, verify that there is a line containing the name(s) and IP address of your server.

If there is no current entry for your server name, you must 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    2004/02/18 21:02:29
#ident  "@(#)cmd-inet:etc/hosts 1.1"
#
# Internet host table
127.0.0.0 loopback
127.0.0.1 localhost
135.0.0.150 <your server name>
135.0.0.151 athena
135.0.0.152 medea
135.0.0.154 theseus
135.0.0.156 perseus
```

You can configure a total of 16 peer systems.

**Note** While the /etc/hosts file is open, you should also add the server/host name and IP address of any other server that you will need to communicate with.

---

## Create FileNet Users and Groups

### Server Types

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.

**Application** server during an Application server installation.

---

In this section, you will use **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 users' home directory. If you want to use this, you will have to make a file system for it.) Refer to Solaris documentation for more information.

- 1 Verify that you are logged on as **root**, and that you are running X Windows.
- 2 Open a window, and launch the **admintool** by entering:  
  
**admintool &**  
  
The Admintool:Users window displays.
- 3 From the Admintool:Users window, select the **Browse** option, then select Groups.
- 4 Select **Edit** and then select **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:

Group Name	Members	Group Description
fnusr	fns, root, <dba user>	Members can operate any FileNet software (including COLD). All operators and administrators must belong to this group.
fnadmin	fns, root	Members can perform administrative functions. Administrators must belong to this group to change configuration, perform diagnostics, or restore backups.
fnop	fns	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 following user:

User Name	Group Assignment
fnsw	Primary Group: fnusr Secondary Group: fnadmin, fnop

---

**Tip** Help for all of the fields in the Admintool: Add User dialog box is available by clicking Help.

---



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

**Note** If you want 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 others user to **fnop** or **fnadmin**, you must also add them to the **fnusr** group.

---

11 Exit the **admintool**.

## Set Up Password for **fns** user

**Note** Skip the steps in this procedure if you set the user passwords while creating users in **“Create FileNet Users and Groups” on page 53**.

---

If you have not previously established a password for **fns**, create the password now before proceeding with the Image Services software installation.

- 1 To set up the **fns** password, at the system prompt enter:  
  
**passwd fns**
- 2 You are then prompted New password:.
- 3 After you enter the password, you are then prompted Re-enter new password:.
- 4 After you enter the password a second time, you return to the system prompt.

## Install Volume Management Software

To create or modify file systems and volumes for the FileNet Image Services software, the **System Administrator** must install volume management software on each server.

- Solaris Volume Manager - included with the Solaris 9 Operating System (OS).

- VERITAS Volume Manager 3.x for Solaris - available from Sun or directly from Veritas. Included with Sun StorEdge disk arrays.

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

For information on installing Veritas Volume Manager documentation and software, see [“Appendix C – Installing Veritas Volume Manager” on page 260](#).

## Create Logical Volumes for Image Services

Create the following file systems and volumes using either the virtual administrator or the storage administrator. The sizes shown in the following table are **minimum** sizes. Refer to [“Table 2-1 FileNet Volumes” on page 60](#) and for the appropriate sizes for this FileNet system.

---

**Note** **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 should 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 2-1 FileNet Volumes

Volume Name	Mount Point	Minimum Size	Actual Size You Create	User	Group	Mode
fnsw	/fnsw	500m		fnsw	fnusr	775
local	/fnsw/local	500m		fnsw	fnusr	775
fn_cache0	n/a	100m		fnsw	fnusr	664
fn_permanent_db0	n/a	100m		fnsw	fnusr	664
fn_permanent_rl0	n/a	72m		fnsw	fnusr	664
fn_transient_db0	n/a	40m		fnsw	fnusr	664

Table 2-1 FileNet Volumes, Continued

Volume Name	Mount Point	Minimum Size	Actual Size You Create	User	Group	Mode
fn_transient_rl0	n/a	72m		fnswh	fnusr	664
fn_sec_db0	n/a	12m		fnswh	fnusr	664
fn_sec_rl0	n/a	4m		fnswh	fnusr	664

---

**Tip** The Actual Size You Create each volume is determined by FileNet's SCouT planning tool.

---

## Set Up Links Required for Image Services

**Server Types** 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.

**Application** server during an Application server installation.

---

In this section you will link the Image Services and RDBMS database names to their volume names by creating the **filenet.links** file, entering the correct soft link information, and executing the file.

- 1 Verify that you're logged on as **root** user.
- 2 Enter the following commands to create, and go to the `/fnsw/dev/1` directory:

```
mkdir -p /fnsw/dev/1  
cd /fnsw/dev/1
```

**Note** The /dev and/or /1 directories may already exist. If you get a message similar to the following: mkdir: cannot create dev: File exists, one or both of the directories already exist.

---

- 3 Create (and edit) the **filenet.links** file using your preferred editor (for example, **vi**).

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
```

where **<logical volume>** is the disk location of the volume and **dbname** is the data base name. For example:

```
ln -s /dev/vx/rdisk/fndg/fn_cache0 cache0
```

**Note** 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 volumes. (Make sure that no two volumes 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** should contain link information similar to the following:

### On a Combined (Root/Index/Storage Library) Server

```
ln -s /dev/vx/rdisk/fndg/fn_cache0 cache0
ln -s /dev/vx/rdisk/fndg/fn_permanent_db0 permanent_db0
ln -s /dev/vx/rdisk/fndg/fn_permanent_r10 permanent_r10
ln -s /dev/vx/rdisk/fndg/fn_transient_db0 transient_db0
ln -s /dev/vx/rdisk/fndg/fn_transient_r10 transient_r10
ln -s /dev/vx/rdisk/fndg/fn_sec_db0 sec_db0
ln -s /dev/vx/rdisk/fndg/fn_sec_r10 sec_r10
```



### On a Root/Index Server

```
ln -s /dev/vx/rdisk/fndg/fn_sec_db0 sec_db0
```

```
ln -s /dev/vx/rdisk/fndg/fn_sec_r10 sec_r10
```

### On a Storage Library Server

```
ln -s /dev/vx/rdisk/fndg/fn_cache0 cache0
```

```
ln -s /dev/vx/rdisk/fndg/fn_permanent_db0 permanent_db0
```

```
ln -s /dev/vx/rdisk/fndg/fn_permanent_r10 permanent_r10
```

```
ln -s /dev/vx/rdisk/fndg/fn_transient_db0 transient_db0
```

```
ln -s /dev/vx/rdisk/fndg/fn_transient_r10 transient_r10
```

- 4 Save the changes.
- 5 Use **chmod** to change the permission of the **filenet.links** file by entering the following:

```
chmod 755 filenet.links
```

**Note** If you do not change the permission of **filenet.links**, you will not be able to execute the file.

---

6 Execute the **filenet.links** file by entering the following commands:

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

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

```
ls -l
```

---

**Note** To display the volume owner and group use information, enter the following command:

```
ls -lL
```

---

The directory should contain the linked directories specified in the **filenet.links** file. If the /fnsw/dev/1 directory does not contain the links as shown above, verify and, if necessary, update the **filenet.links** file

with any changes and verify the permissions are correct for the file.  
Execute the links file again.

# Preparing for the Installation

This chapter describes how to modify your system environment before installing the Image Services software.

## Server Types

---

Perform the steps in this section on these servers:

**Root/Index** and **Storage Library** server during a Dual server installation.

**Root/Index/Storage Library** server during a Combined server or Entry server installation.

**Application** server during an Application server installation.

---

---

## FileNet TC Worksheet

The following sections contain tables intended to allow you to organize the necessary information in a single place for easy reference during the installation process.

### System Information

- 1 Version of the Solaris Operating System: \_\_\_\_\_  
(needs to be **Solaris 9 OS**, either 32-bit or 64-bit)
- 2 Character set used by the operating system: \_\_\_\_\_  
(e.g., USASCII7, ISO8859-2, ISO8859-2, etc.)
- 3 Record the appropriate server information in the table below.

Table 3-1: Server Information

Installation Information	System Information
Server Memory	
Server IP Address	

Table 3-1: Server Information

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

**Important!**

The 10-digit ssn, which is assigned by FileNet, is written onto all storage media and **must** be unique for each 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.

**Note**

The Solaris Operating System does not allow an underscore (“\_”) as part of the server name. However, the Image Services software will accept the underscore as part of the domain name. The FileNet domain name does not necessarily have to be the same as the server name.

## Peer System Information

The Domain name, System Serial Number (SSN), and IP address of each Image Services system (peer system) that is going to be communicating with this Image Services system. The serial number(s) should contain 10 digits. The network address should contain four numbers separated by decimals (e.g., **197.0.0.146**).

Table 3-2: Peer System Information

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

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

## Printer Information

Record the information for each printer on your system in the table below. The IP address(es) should contain four numbers separated by decimal points (for example, **197.0.0.146**).

Table 3-3 Printer Name, Type, and Address

NCH Name	Printer Type	Printer Server IP Address



## Storage Library Information

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

Table 3-4: 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.)

Table 3-4: Storage Library Information, Continued

SCSI Parameter	Setting	Parameter Description
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.)
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.)

---

**Note** During the **fn\_edit** configuration process, you might need to enter one or more values for these parameters.

---

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

Table 3-5: System Board Information

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

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

- 3 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 3-6: Storage Library Device Information

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

Record the path for the Storage Library Device Driver here: \_\_\_\_\_.

## Optical Drive Information

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

Table 3-7: Optical Drive Information

Optical Drive Information	Drive 1	Drive 2	Drive 3	Drive 4
Drive Type (Hitachi_I, etc.)				
SCSI Adapter Number (0-3)				
SCSI ID Number (0-6)				
Logical Unit Number (0-3)				

Record the path for the Optical Drive Driver here: \_\_\_\_\_.

## Dataset Sizes

Complete the following dataset (volume) tables appropriately for your system. The following table includes the minimum default sizes for the Image Services datasets.

Table 3-8: Dataset Information

Dataset Name	Minimum Size	Your Size (in MB)
fn_cache0	100 MB	
fn_permanent_db0	100 MB	
fn_permanent_r10	72 MB	
fn_transient_db0	40 MB	
fn_transient_r10	72 MB	
fn_sec_db0	12 MB	
fn_sec_r10	4 MB	

---

## Cache Percentages

You must determine the minimum and maximum cache sizes (in %) for the following caches. Record the cache information you gather in the table below.

Table 3-9: Cache Information

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

Most of this information can be retrieved from the SCouT program.

## Install Relational Database Software

### Server Types

Perform the steps in this section on these servers for the FileNet groups and users:

**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, SQL services, or VWServices.

---

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

### IBM DB2 V8.1

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



- The **DB2 server** software must be installed on a dedicated remote AIX server. Also, the DB2 database for Image Services must be created on the remote AIX server. Refer to **Chapter 2** of the [\*Guidelines for Installing and Configuring DB2 Software\*](#) for further information.
- The **DB2 client** software needs to be installed on the HP-UX Image Services server and linked to the remote DB2 database. Refer to **Chapter 3** of the FileNet [\*Guidelines for Installing and Configuring DB2 Software\*](#) for details.

The Guidelines document may be given to the Database Administrator.

#### **DB2 Database Information**

After DB2 has been successfully installed, the Database Administrator needs to provide the following information to the System Administrator and the FileNet Technical Consultant.

	Default User Name	User Name You Chose	Default Group Name	Group Name You Chose
Instance Owner	db2inst1		db2iadm1	
Fenced User	db2fenc1		db2fadm1	
DB2 Administration Server User	db2as		db2asgrp	

FileNet Recommended Tablespace	Tablespace Name Actually Assigned	Minimum Size (MB)	Tablespace Size Actually Created
userspace1		200	

**f\_sw password:** \_\_\_\_\_

**f\_sqi password:** \_\_\_\_\_

**f\_maint password:** \_\_\_\_\_

**f\_open password:** \_\_\_\_\_

**DB2 Database Alias Name:** \_\_\_\_\_  
(e.g., indexdb)

**User Tablespace Location:** \_\_\_\_\_  
(e.g., userspace1)

After you have this information, you're ready to install the FileNet Image Services software. Continue with **Chapter 4, "Installing FileNet Image Services Software," on page 84.**

# Installing FileNet Image Services Software

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

- Installing FileNet Image Services software
- Installing the user environment templates
- Setting up FileNet passwords
- Setting file ownerships and permissions

---

**Note**

If you want to log in as a specific user and want to run the FileNet tools and software, you need to add this user into the **fnadmin** and **fnop** groups.

---

- Installing the Universal SLAC Key

## Check the Link to the DB2 Database

Since the DB2 database is located on a remote AIX server, you can use the Command Line Processor (CLP) to check the connection between the DB2 Client and the remote DB2 database.

Log onto the Image Services server as the DB2 Client instance owner (such as **fns**), and enter:

```
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 f\_sw user's password set up by the Database Administrator.

## Install the IS Software

### Server Types

---

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

---

This section of the installation procedure details the steps necessary for installing and configuring the Image Services software on your system.

---

**Note** The **COLD 4.0** software is included on the FileNet **Image Services 4.0 DB2 Edition for Solaris** CD-ROM. However, you must be licensed to use the COLD application. If you are licensed to use the COLD 4.0 software, you can use the same basic installation instructions contained in this section to install the application on your system.

---

---

**Note** If you are using the Common Desktop Environment (CDE), some of the steps in this procedure may be slightly different. Refer to the CDE user documentation for more information.

---

- 1 Make sure you're logged on as **root** user.
- 2 Change to the /tmp directory, and use your preferred text editor, such as **vi**, to create a file named "properties". For example:

**cd /tmp**  
**vi properties**

- 3 Type the following lines into the new file:

```
instance=unique  
partial=ask  
runlevel=ask  
idepend=ask  
rdepend=ask  
space=ask  
setuid=nocheck  
conflict=nocheck  
action=nocheck  
basedir=default
```

- 4 Exit from the editor and save the file.
- 5 Insert the **FileNet Image Services 4.0 DB2 Edition for Solaris** CD-ROM into the CD-ROM drive. The File Manager window displays.

---

**Note** If you are using CDE, the File Manager might not display automatically.

---

6 As **root** user, launch the **pkgadd** utility by entering:

```
pkgadd -a properties -d /cdrom/filenet_is_4020/SunOS_5.9/IS/fnsw all
```

7 The Image Services software is loaded into the **/fnsw** directory.

---

**Note** While the optical device drivers are installing (**/fnsw/bin/fnsod.install**), you may see output similar to the following (if the optical devices are not attached):

```
Beginning fnsod.install script
```

```
No match
```

```
Driver (fnsod) removed
```

```
-rwxr-xr-x 1 root sys 88915 Feb 14 10:03 /kernel/drv/fnsod
```

```
-rw-r--r-- 1 root sys 1726 Feb 14 10:03 /kernel/drv/fnsod.conf
```

```
Driver (fnsod) installation failed. Possible error in H/W setup
```

```
    Please check using 'probe-scsi-all' command and correct  
    problem. Driver will attempt to reload with each boot
```

```
Running /fnsw/bin/fnsod.install failed.
```



After you have configured and attached the optical devices, rebooting the system will put the drivers in place correctly.

---

Each package name and description displays as it is being added to the system. The installation should take approximately 10-15 minutes to complete.

After the Image Services software installation is complete, a message similar to the following displays.

“Installation of <fns-w-xv> was successful, press <Return> to continue.”

- 8** If you also want to install COLD software, enter:

```
pkgadd -a properties -d /cdrom/filenet_is_4020/SunOS_5.9/IS/cold all
```

After the COLD software installation is complete, a message similar to the following displays.

“Installation of <fns-w-c2> was successful, press <Return> to continue.”

- 9 Leave the Image Services CD in the CD-ROM drive while you complete the steps in the next several sections.

## Install the Required Pre-Startup Fixes

### Server Types

---

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

---

At this time, install only the fixes that directly relate to Image Services 4.0 DB2 Edition initial configuration issues. (You'll install any general Image Services 4.0 DB2 Edition patches in a later section.) Search through the Release Notes file for the key words **PRE-STARTUP** and **REQUIRED**.

### Note

---

These are only the fixes required to start the FileNet Image Services software successfully. Install any other fixes after the update has been successfully completed.

---

You can retrieve these fixes from the Customer Support Web site <http://www.css.filenet.com> or from the Tech Info CD, which is supplied to FileNet Technical Consultants.

## Install the User Environment Templates

### Server Types

---

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

---

In this section you'll use the **inst\_templates** script to set up profile and environment files that are pre-customized for the Image Services installation. The **inst\_templates** command asks you, one by one, if you want to replace the existing files.

- If you enter **y** for yes in response to each prompt, the existing files are renamed with a .old extension and the new files are created using the original file name.
- If you enter **n** for no to any prompt, that file will not be installed.

**Note** If you already have customized the environment settings files in a particular user's directory, answer **n** (No) to each of the prompts. You should merge the settings in the templates with your customized files. The templates can be found in `/fnsw/etc/*.template`.

If you run `inst_templates` more than once, existing `.old` files are not overwritten. The new `.old` files are given `.old.0` extensions, and each time you run `inst_templates` after that, the last digit of the file name increases.

For example, if you've run `inst_templates` several times, you may see `.login`, `.login.old`, `.login.old.0`, `.login.old.1`, and `.login.old.2` files in the user's home directory. The `.login` file is the current file, while the `.login.old.2` is the most recent `.old` file.

---

## Set Up the fnsw Environment

- 1 Logon as **fnsw** user. (DO NOT switch [su] to fnsw.)

**Note** After you logon as **fns**w, verify that the home directory for fns w exists. If the directory does not exist, create the directory manually.

---

2 At the command prompt, enter the following command:

**/fns w/etc/inst\_templates**

- a Answer the prompts as appropriate for your server.
- 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 DB2 software installed, select **2**=DB2.

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

**Note** If you're planning to use an existing 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 **DB2** software exists on this server, enter the path to the sqllib directory within the DB2 Client instance owner's home directory.

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

- 3 When inst\_templates is finished, log out as **fns**w user and log back in to put the templates into effect.

## Set Up the root Environment (Optional)

- 1 Logon as **root** user.

---

**Note** Complete the remaining steps in this section only if you do not have a specialized root environment already established on your system (for

example, a .login file with specific system-related entries). If you already have a **root** environment established, skip the rest of this section.

---

- 2 Enter the following command:

***/fnsw/etc/inst\_templates***

- a Answer the prompts as appropriate for your server.
  - b Answer the relational database prompts exactly the same as you did for the **fnsw** user 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.

## Verify/Modify root User Parameters

You must add the path to the volume management software in the login files for the **root** user. To modify the system setting, complete the following steps:

- 1 Verify that you are logged on as **root** user.
- 2 Using a preferred editor (for example, **vi**), edit either the `.cshrc` (csh) or `.profile` file by entering a command similar to the following:

**vi <filename>** (for example, `.cshrc` or `.profile`)

- 3 Add/verify the following line in the PATH variable:

**/opt/VRTSvmsa/bin** (for Veritas 3.1)

---

**Note** If the PATH variable already includes the appropriate entry, exit the editor without saving changes and skip to the next section.

---

- 4 Save the changes to the configuration file, and exit the editor.
- 5 Logout as **root** user, and logon again as **root** for the changes to take effect.



**Note** After you've set up the Image Services environment by running **inst\_templates**, use **xinit** (not `/usr/openwin/bin/openwin`) to start X Windows.

---

## Set File Ownerships and Permissions

**Server Types** Perform the steps in this section on **all servers**.

---

In this section, you create all directories needed for the Image Services software using the **fn\_setup** utility. In addition, you will set the appropriate file ownerships and permissions for the directories. You will be asked for system-specific information, refer to the [“FileNet TC Worksheet” on page 69](#) for the correct information.

**Note** The **fn\_setup** program attempts to set the permissions for all files under `/fnsw` and `/fnsw/local` directories using a `permission_table` that is updated with each new Image Services release. If non-FileNet files are placed in the `/fnsw` directory structure, a `local_permission_table` needs to specify the appropriate permissions for these files. See

Chapter 3, “Directories and Files,” of the [\*System Administrator’s Companion for UNIX\*](#) for details.

Even though you must be **root** user to run **fn\_setup**, **fn\_setup** may not be able to set the permissions for some secured files. If **fn\_setup** encounters a file on which it is not allowed to set permissions, the program logs an error and continues with the next file.

**fn\_setup** must be run the first time as **root** user so it can set itself to be owned by root. Thereafter, **fn\_setup** can be run by any member of the **fnusr** group.

---

- 1 Make sure you’re logged on as **root** user.
- 2 Run the **fn\_setup** tool by entering:

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

- 3 Reply to the prompts with the requested information. If the default value shown in brackets is correct, press **Return** to continue.

---

**Note** The Solaris Operating System allows an underscore character (“\_”) as part of the domain name. However, the FileNet software does NOT allow the underscore character in the domain name. If the domain name contains an underscore, stop the update at this point, and contact the FileNet Response Center for assistance.

---

- a The NCH server is the generally the Root server. If you are installing a separate Storage Library server or an Application server, select 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 updating a separate Storage Library server or an Application server, enter the name of the Root server.

```
Enter NCH server name [clark:FileNet]:
```

- 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 [11008016xx]:
```

### Important!

---

The 10-digit ssn, which is assigned by FileNet, is written onto all storage media and **must** be unique for each 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.

---

- 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 DB2 software installed, select **2**=DB2.

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

---

**Note** If you're 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.

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

- 4 The `fn_setup` tool then displays the information you supplied so you can confirm your entries:

```
This is the setup configuration:
  NCH server name:  clark:FileNet
  SSN:  11008016xx
  Relational database type:  DB2
  Relational database home:  /opt/IBM/db2/V8.1
Do you want to continue (y/n) [y]:
```

- 5 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: Creating file /fnsw/local/sd/root_station
fn_setup: Creating file /fnsw/local/ssn
fn_setup: Creating file /fnsw/local/sd/nch_domain
fn_setup: Calling fn_util initnch
fn_setup: Changing permission on FileNet software and
databases
```

On a new installation, you will see that the NCH\_db0 is zeroed out as **fn\_setup** initializes the nch\_db the first time. (The **fn\_setup** program modifies the **nch\_update** after NCH\_db initialization.)

## Install the Universal SLAC Key on the Root Server

### Server Types

---

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 or Entry server installation.

---

The Universal SLAC Keys are located on the Image Services CD-ROM.

- 1 Choose the appropriate SLAC Key for your Image Services system:
  - **uisdb2.key** - Image Services with eProcess for DB2

- 2 As **fns**w user, create a directory for the SLAC Key on your root server, and copy the appropriate key.

For an IS system with eProcess for DB2, you might enter:

```
mkdir /fnsw/local/SLAC  
cp /cdrom/SLAC/uisdb2.key /fnsw/local/SLAC
```

---

**Note** The path to the /cdrom/SLAC directory on the CD-ROM may be different depending on the CD-ROM mounting process that was used.

---

- 3 To install the SLAC Key, enter the following command as **fns**w user to start the Software License Manager:

For an IS system with eProcess for DB2:

```
/fnsw/bin/lic_admin -f /fnsw/local/SLAC/uisdb2.key
```



**Note** The SLAC key is stored in the NCH database, so if you reinitialize the NCH database (after the first initialization), you must reinstall the SLAC key.

---

## Remove the Image Services CD-ROM

**Server Types** Perform the steps in this section on **all servers**.

---

When both the Image Services software and the Universal SLAC Key have been installed successfully, return to the user's home directory and eject the Image Services CD-ROM by entering:

```
cd /  
eject
```

Remove the CD from the CD-ROM drive and store it in a safe place.

---

## Modify the /etc/inittab File

### Server Types

---

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

---

Edit the /etc/inittab file to prevent the FileNet Image Services software from starting automatically each time the server is rebooted. Later in this procedure you will have the opportunity to re-enable this feature.

- 1 Verify you are logged on as **root** user and change to the /etc directory by entering the following command:

```
cd /etc
```

- 2 Using a preferred editor (for example, **vi**), open and edit the inittab file.
- 3 Locate and comment out (by adding a **:** before) the following line:

```
fn:3wait:/bin/sh /etc/rc.inifnsw </dev/console> /dev/console2>&1
```

- 4 If relational database software is not installed on this server (for example, if it's a storage library server), you can skip to the section, **[“Check Versions of Installed Software” on page 111.](#)**

## Additional DB2 Tasks

### Verify the setup\_config File

As **root** user, use your preferred text editor (such as **vi**) to view the setup\_config file. Enter:

```
cd /fnsw/local
vi setup_config
```

Make sure the value of RDBMS\_HOME is set to the DB2 Client instance owner's DB2 home directory, such as /home/fnsw/sqllib. If not, change it to the correct value.

Exit from the file and save changes, if necessary.

---

## Modify TCP/IP Port Settings (optional)

### Server Types

---

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

---

You can make your FileNet system run more efficiently by making changes to the `/etc/rc2.d/S69inet` file. The modification expands the number of available ephemeral ports and reduces the time-out delay. These modifications are not required, but have been found to be optimal when running FileNet software. So unless you have set these options for other system reasons, we recommend that you make these changes.

- Ephemeral ports are temporary ports assigned by a server's IP stack, and are assigned from a designated range of ports for this purpose. When network traffic is extremely heavy, it's possible to run out of ephemeral ports unless you specify a wider range of port numbers in `/etc/rc2.d/S69inet`.
- The `tcp_close_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.

- 1 Make a backup copy of the **/etc/rc2.d/S69inet** file before you modify it.
- 2 As **root** user, make sure you have write permission on the this file by entering:

```
chmod 754 /etc/rc2.d/S69inet
```

- 3 Use your preferred text editor (such as **vi**) to modify the **/etc/rc2.d/S69inet** file.
- 4 Add the following lines somewhere near 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_close_wait_interval 30000
```

- 5 Save your changes and exit from the file. These changes will go into effect when the server is rebooted in the next section.

## Reboot the Server

---

**Server Types** Perform the steps in this section on **all servers**.

---

As **root** user, reboot the server by entering:

```
/etc/shutdown -i6 -g0 -y
```

The system will shutdown and reboot automatically. (You may see several error messages because the system has not been fully configured.)

## Check Versions of Installed Software

### Server Types

---

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

---

It is important to check which version of FileNet software you have installed.

- 1 Logon as **root** user.
- 2 Use the **pkginfo** utility to check the release number of the software by entering the following command:

```
pkginfo -l fnsw-rel*
```

Output similar from the following displays. (The information that displays on your system will be different from that shown.)

```
PKGINST:  fnsw-rel
      NAME:  FileNet IS release
CATEGORY:  application
      ARCH:  sparc
VERSION:   4.0.20.nn
      PSTAMP: ursula97090904143448
INSTDATE:  Mar 26 2004 16:59
      STATUS: Completely Installed
      FILES:  3 installed pathnames
              3 shared pathnames
              2 directories
              1 blocks used (approx)
```

Verify the version number and the installation date. If the version number is not correct, contact your FileNet representative for current media. Do not proceed any further until you receive the correct installation media.



## Verify/Update the /etc/services File

### Server Types

---

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

---

- 1 Verify that you're logged on as **root** user, and check the **/etc/services** file to make sure that the following parameters exist:

```
tms 32768/tcp
cor 32769/tcp
nch 32770/udp
fn_snmpd 161/udp
fn_trapd 35225/udp
```

---

**Note** If you have a separate NIS Server, check the /etc/services file on the NIS server to see if the **cor**, **nch** and **tms** parameters exist.

---

- 2 If necessary, add the parameters to the file and save your changes.

## Configure tty Ports (Optional)

### Server Types

---

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

---

If your site has already configured a tty port for the modem or the optical disk device used for Image Services, skip this section.

If you are using a FileNet OSAR (64, 90, 96, etc.), use the **admintool** to configure a tty port for a modem or for the optical disk device arm.

### Note

---

If you are using a multi-port serial/parallel board in your server, insure that the board is configured for RS232 protocol. In addition, OSAR arms and modems should address serial ports **ttty00** through **ttty07**.

---

## Configure the Optical Device Port

- 1 Logon as **root** user.

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

#### **admintool**

The Admintool window displays.

- 3 From the Admintool window, select the Browse menu option, then select Serial Ports.
- 4 Select the tty port number you wish 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 Select Apply to configure the port.
- 12 Select **OK**.

## Continue With Server Configuration

For a **Combined server** or **Dual server** system, continue with the next chapter, [Chapter 5, “Configuring FileNet Image Services Software,” on page 117](#).

If you’re adding an **Application server**, skip to the section, [“Configure the Root Server” on page 167](#) in Appendix A.

If your adding a **Storage Library server**, skip to the section, [“Configure the Root Server” on page 216](#) in Appendix B.

# Configuring FileNet Image Services Software

In this chapter you will configure the FileNet Image Services software installed on your system. After the software is configured, you will initialize the database tables for use with the Image Services software.

## Logon to the Configuration Database

### Server Types

---

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 or Entry server installation.

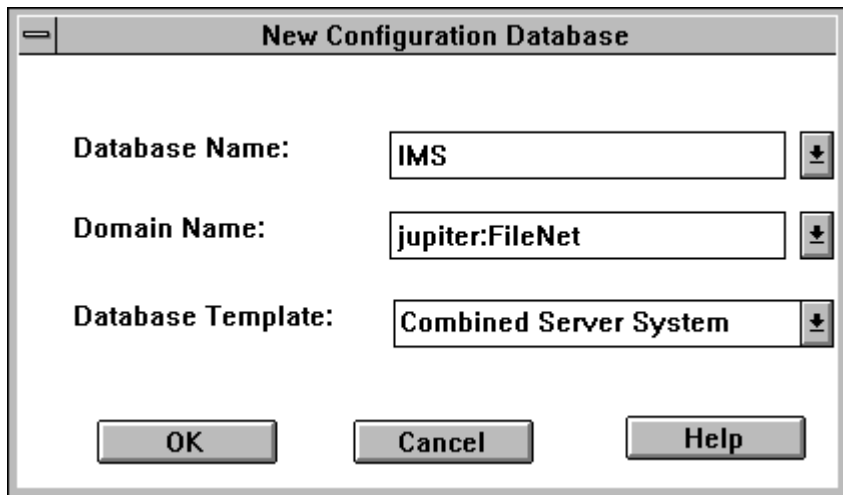
**Application** server running WorkFlo Queue Services or SQL Services.

---

- 1 Logon as **fns**, and start X Windows (if you have not already done so).
- 2 Open a new X window, and enter the following command:

**fn\_edit &**

A dialog box similar to the following displays:

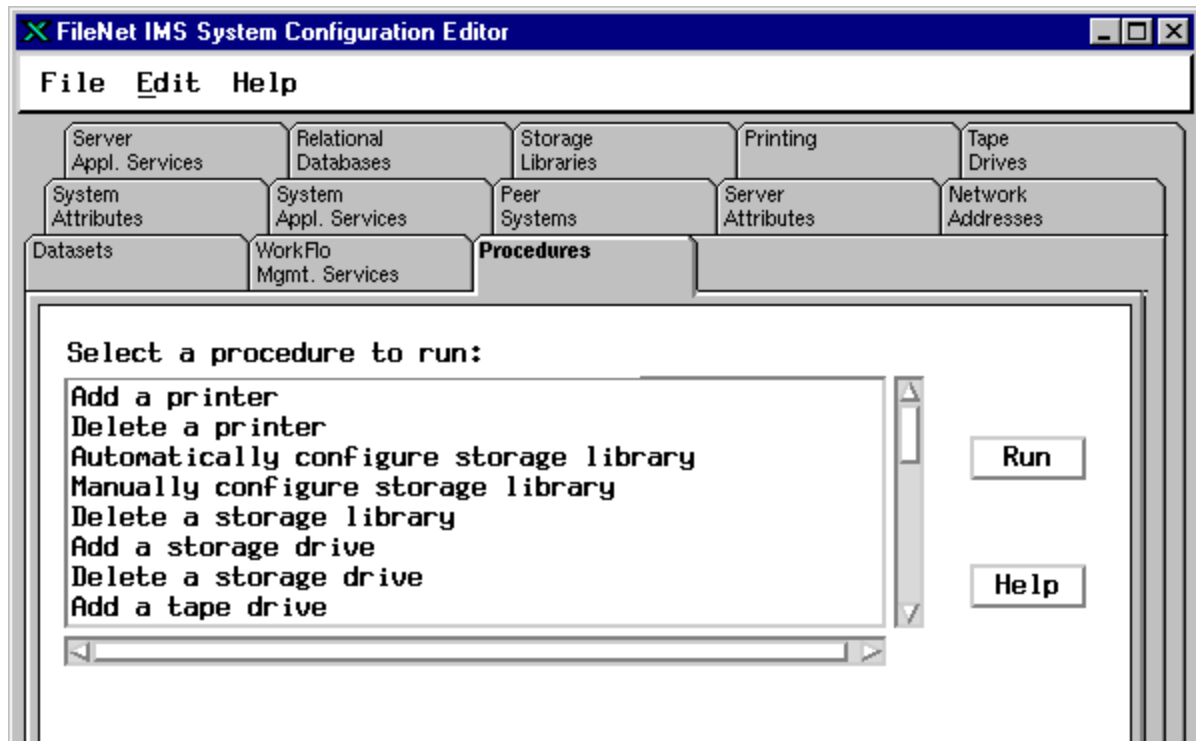
**CAUTION**

If the Open Configuration Database dialog box displays instead of the New Configuration Database dialog box, an Image Services configuration (cdb) file already exists. Click **Cancel**, then from the File pulldown menu, select **New**.

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

- 3 Verify that the Domain Name information is correct. (The two-part domain name is structured as follows: <Domain>:<Organization>.)
- 4 From the Database Template pull-down list, select a template type from the following template choices:
  - Combined Server System
  - Dual Servers System
  - Remote Entry System
  - WorkFlo Management System
- 5 After you have verified the domain information and selected the appropriate template type, click **OK**.





- 6** You will receive several query prompts. The prompts you receive depend on which template you selected in Step 4. Refer to the [“FileNet TC Worksheet” on page 69](#) to provide the appropriate answers.

---

**Tip** For more instruction on answering the prompts for each template type, use the on-line help . Select the Help menu option in the Configuration Editor.

---

When you're prompted for information about your Relational Database Management system, DB2, use the information that was supplied to you by the Database Administrator when the RDBMS software was installed. Refer to the [“DB2 Database Information” on page 81](#).

In addition to prompts for other system information, you'll be asked to:

- Select the relational database type (DB2 8.1.0).
- Enter and verify the passwords assigned to:
  - f\_sw
  - f\_maint

- f\_sqi
- f\_open

- Enter the relational database name.
- Enter the user tablespace name.

After you've answered all the template prompts, you'll receive a message stating that configuration is complete.

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

---

**Note** When using the various configuration tabs in the FileNet System Configuration Editor window, you will click on a tab, complete the fields as instructed, and immediately click on the next tab (without exiting), as directed.

Each screen and pop-up window has an on-line help button designed to provide information you may need to complete the screen or window.

---

## Select and Configure the Relational Database Instance (if applicable)

**Important!** 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 databases.

For **DB2**, see the FileNet [\*Guidelines for Installing and Configuring DB2 Software\*](#).

The Database Administrator has probably already supplied this information in the section, [\*“Install Relational Database Software” on page 80\*](#) in Chapter 3.

---

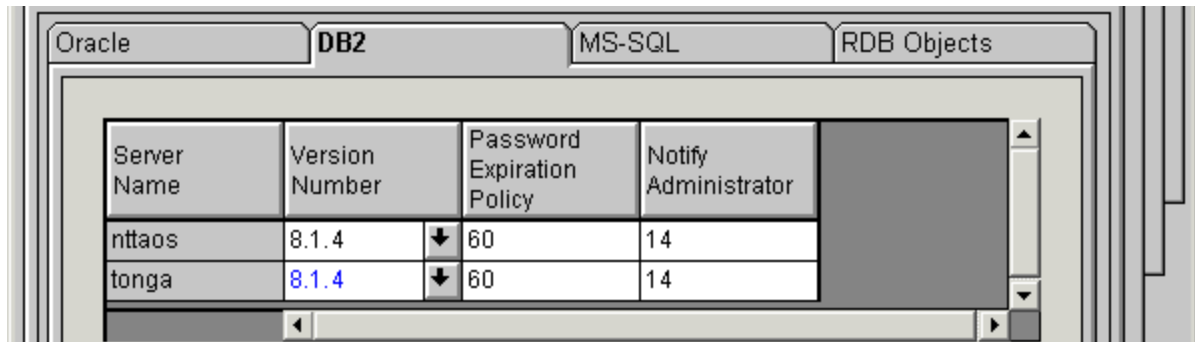
### DB2 V8

#### Verify the Database and User Tablespace Names

- 1 Click the Relational Databases tab, then click the RDB Objects subtab.

Server Name	Object Name	Location
nntaos	db_name	indexdb
nntaos	user_tbl_space	userspace1

- 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:



Server Name	Version Number	Password Expiration Policy	Notify Administrator
nttaos	8.1.4	60	14
tonga	8.1.4	60	14

- **Version** - must be **8.1.4** or later (DB2 version 8.1.0 plus FixPak 4a or later). DB2 version 7.2.0 is not supported at this time.
- **Password Expiration Policy** This field lists the number of days that the f\_sw, f\_maint, f\_sqj, 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.

**Note**

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 prior to 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.

---

**Note** 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 the day the password expires.

---

## Verify the Image Services Character Set

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.

Change the Default Character Set to match the current operating system character set and the DB2 character set; for example, ISO 8859-2.

If the FileNet system has been converted from an older character set, such as FileNet 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.

## Modify Dataset File Sizes (Optional)

Click on the Datasets tab from the main edit menu to view a list of the datasets added by default. All of the dataset 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.

Refer to the [“Dataset Sizes” on page 78](#) that were determined by the SCouT planning tool. Your dataset sizes should match the sizes recorded in that table.

When creating larger datasets, note the following:

- The sizes of all of the datasets 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.
- Maximum size is **16 GB** for dataset caches.
- If you need a larger cache, you need to run the Add Additional Dataset procedure under the Procedures tab.
- You can add up to 255 more dataset volumes, each 16 GB in size.

### Note

---

This 16GB/dataset caches function allows for terabyte caches. The maximum cache size is 4080GB, or 4 terabytes. The maximum partition size depends on two operating system features: 1) the host operating system must support 16GB partitions, and 2) the host operating system must provide a mechanism which allows seeking to any offset up to 16GB from the beginning of the partition. Due to memory requirements, you may need to use Cache Backup rather than CSM\_exim to backup millions of cache objects.

Refer to the [“FileNet TC Worksheet” on page 69](#) for previously defined or calculated dataset sizes.

---

## Configure Logical Cache (Optional)

- 1 Click on the Server Application Services tab in the FileNet System Configuration Editor window.
- 2 Select the Cache sub-tab to view a list of caches configured on your server. Default values are automatically given to each of the caches.

---

**Note** Refer to the **[“FileNet TC Worksheet” on page 69](#)** for information concerning your cache percentages.

---

- 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. It is recommended that these values are left set to their default values.

The following sub-tabs 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)

- 1 Click on the System Application Services tab in the FileNet System Configuration Editor window.
- 2 Select the Document Services sub-tab if you want to change the values of any of the document services parameters. You can change document and surface id ranges in this menu.

---

**Note** Click Help if you have any questions on the parameter values.

---

- 3 If you want to change the way images are sent to the optical disk, select the Others sub-tab.

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 in the new value.

## Configure the MKF Database Parameters (Optional)

The MKF database parameters are initially set to default values, which are acceptable for most installations. Refer to the [“FileNet TC Worksheet” on page 69](#) for information concerning the parameters.

- 1 Click on the MKF Databases tab in the FileNet System Configuration Editor window.
- 2 Review the MKF parameters on this tab. If you need to change any of these values, select the parameter you want to change and type in the new value.

**Note** The default MKF database block size in Image Services 4.0 DB2 Edition is 8 KB. Other possible block sizes are 1 KB, 4 KB, or 16 KB. If you select 1 KB, the maximum size of the database is limited to 16 GB (eight 2 GB datafiles). The other block sizes enable you to have Permanent and Transient databases larger than 16 GB. Click Help if you have any questions on the parameter values.

---

## Configure Network Parameters

This section assumes that you have already installed and configured the appropriate network protocol on the Root/Index server.

Before beginning the steps included in this section, you must know the following information: the Internal Network Number for your system, the File server name, and the MAC address. (Refer to the [“FileNet TC Worksheet” on page 69](#) for this information.)

**Note** If you are configuring Dual Homing support, you must have two network adapter cards installed on your server. Configure the appropriate protocol for each network adapter card on your system.

---

To configure the network parameters, complete the following steps:

- 1 Select the System Attributes tab, and scroll over to the Protocol Preferences option field.
- 2 From the Protocol Preferences option field, select the TCP option from the pull down options list.
- 3 From the System Configuration Editor window, select the Network Addresses tab.
- 4 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:

**10.2.53.33**

After the FileNet Image Services software restarts, `fn_build` will determine if any changes have occurred in the `fn_edit` configuration.

### Modify the System and Server Parameters (Optional)

Use this procedure to modify your system and server parameters.

---

**Note** Consult the online Help if you have any questions on the parameter values.

---

- 1 Click on the Performance Tuning tab in the FileNet System Configuration Editor window.
- 2 To modify the system processes parameters (for example, `ds_notify`, `rmt_commit`, etc.), click on the System Processes sub-tab and type in the new values in the fields of the system processes you want to change.

- 3 To modify the server processes parameters (for example, `bes_commit`, `dtp`, etc.), click on the Server Processes sub-tab 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, etc.), click on the Server Memory sub-tab.

### Exit the System Configuration Editor

- 1 From the FileNet System Configuration Editor window, click on the File pull down and select the Exit option.
- 2 You will then be asked if you want to save the changes you have just made to the current configuration database before you exit.
- 3 Click on the **Yes** button to save the configuration and exit the FileNet System Configuration Editor.



## Build and Initialize the Root Server

### Server Types

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 or Entry server installation.

---

## Build Configuration Files on the Root Server

**Note** The **fn\_build** command checks the validity of the software license. You must have already installed the SLAC key successfully. If you have not installed the SLAC key, do so before executing the **fn\_build** command.

---

- 1 As **fns** user, enter the following command to build the system configuration files:

### **fn\_build -a**

This will generate configuration files used by the components of the Image Services software. Each file is produced in two steps:

- First, a temporary file is produced with a .new extension.
- Second, 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.

Make sure this command runs successfully by checking that no errors have occurred.

- 2 Run the **fn\_setup** tool to set file permissions by entering:

***/fnsw/bin/fn\_setup***

Accept current value at each prompt.

## Verify DB2 Variables on the Root Server

**Note** This section applies only to remote DB2 instances.

---

Ask the **Database Administrator** to start the RDBMS software before initializing the FileNet databases.

Make sure the DB2 Home and DB2 Instance environment variables are set appropriately for both **root** and **fns** users. As each user, enter the following commands:

**echo \$DB2\_INST**

should be set to the name of the DB2 instance owner, such as **fns**.

**echo \$DB2\_HOME**

should be set to the sqllib directory within the DB2 Instance owner's DB2 home directory, such as **/home/fns/sqllib**.

Compare the output of the above commands to the settings determined in the FileNet [\*\*\*Guidelines for Installing and Configuring DB2\*\*\*](#)

**Software.** If DB2\_HOME and the DB2\_INST are not set correctly, return to **“Install the User Environment Templates” on page 91** and run the **inst\_templates** command again.

## Initialize FileNet and RDBMS Databases on the Root Server

Use the procedures below to initialize the FileNet databases.

- 1 As **root** user, initialize the index database and all the MKF databases (includes permanent, transient, and security databases) by entering the following commands on the Image Services server:

```
fn_util linkrdb
```

```
fn_util init > /fnsw/local/logs/init.log
```

This process may take a while (sometimes up to 30 minutes without any feedback to the user); the larger the datasets, the longer the wait. After the initialization process finishes, the prompt returns.

**Note** View the **init.log** file after initializing to make sure that there were no errors in the database initialization process.

---

## Bring Up FileNet Software on the Root/Index or Combined Server

- 1 As **fns** user, stop all FileNet processes by entering the following command:

```
killfns -DAy
```

**Note** Before starting the Task Manager interface, verify that the DISPLAY variable is set (i.e., export DISPLAY="domain:0" for bsh, or setenv DISPLAY domain:0 for csh. (For more information on setting the DISPLAY variable, see [“Software Tuning for COLD Users \(Optional\)” on page 157](#). After you have set the system variables, return to this section.

---

**CAUTION** The Database Administrator must start the RDBMS software before attempting to start the FileNet Image Services software for the first

time. If the DB2 software is not available when the Image Services software starts, the Image Services software will fail and will display error messages. If you receive error messages, start the RDBMS software and restart the Image Services software.

---

- 2 Start the updated FileNet application software by entering:

#### **Xtaskman &**

The FileNet Task Manager interface displays.

- 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. (The FileNet Event Logs window displays.)
- 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 Task Manager window, but do not close the Event Logs window.

- 6 From the FileNet Task Manager window, select START.

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

- 7 Select the CLOSE button. (The Current Status window closes.)

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

## Verify Storage Library Device Drivers on a Combined Server

### Server Types

---

Perform the steps in this section on these servers:

**Root/Index/Storage Library** - (Combined server or Entry server installation)

If you're configuring a Root/Index server, skip to the section, **[“Modify the /etc/inittab File on the Root/Index or Combined Server” on](#)**

[page 150.](#)

If you're configuring a cache-only or MSAR system (no optical devices attached to the Storage Library server), skip to the section, "[Configure Storage Library Device\(s\) on the Combined Server](#)" on [page 147.](#)

---

## Connect Storage Library Device(s)

- 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 Power on your server. After the server finishes booting, logon as **root** user.



**CAUTION**

If you have an HP 600FX (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.

---

- 5 At the system prompt, enter the following command:

**reboot -- -r**

All currently connected optical devices should be configured automatically after the system restarts.

- 6 After the station finishes booting, logon as **root** user.

- 7 Verify that all devices are configured properly. List the currently installed optical device drivers by entering the following commands:

**ls /dev/fnsod\***

You should receive output similar to the following:

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

## Verify/Configure Storage Library Device(s)

If you want to view the information concerning the optical library device(s) configured on your server, select the Storage Libraries tab from FileNet System Configuration Editor window.

### Note

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.)

---

Refer to the **[“FileNet TC Worksheet” on page 69](#)** for information concerning your optical library devices.

## Configure Storage Library Device(s) on the Combined Server

---

**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/Index or Combined Server” on page 150.](#)**

---

**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.

---

- 1 As **fns** user, launch the FileNet 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:<Domain>:<Organization>.)

The FileNet System Configuration Editor window displays.

- 3 From the Procedures tab in the FileNet 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)

To manually configure the ODU on your system, perform the following steps:

- 1 Select the Procedures tab from the FileNet 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.

## Exit the Configuration Editor

Exit the Configuration Editor and save your changes.

## Rebuild the System Configuration Files

To put your changes into effect, stop the FileNet software and rebuild the system files by entering the following commands as **root** user:

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

## Modify the /etc/inittab File on the Root/Index or Combined Server

Edit the /etc/inittab file so the Image Services software will start automatically during a server/system restart.

---

**Note** If you do not know whether Relational Database software will be started when the Image Services software starts, you may choose not to uncomment the line in the inittab file.

If the Relational Database is not available when the Image Services software starts, the Image Services software generates error mes-

sages. If you receive error messages of this type, start the DB2 software, and then restart the Image Services software.

---

- 1 Log on as **root** user 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 the DB2 software is up and running before the FileNet Image Services software restarts.

---

- 3 Locate and re-enable (by removing the `:` symbol) the following line:

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

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

## Configure RES, Cross-Committal, or Multi-Committal Systems

This section presents a brief description of these systems; for detailed information, refer to the *[Image Services Multi-Committal and Cross-Committal Configuration Handbook](#)* .

Each of the FileNet systems in an RES 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.

- A Cross-Committal System is composed of a **source** Image Services system and a **target** Image Services system. The source system commits images to the target system, but does not retain the images locally.
- A Remote Entry Server (RES) 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 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 system. Multi-Committal Systems may or may not be “compatible” systems with non-overlapping document IDs. If they aren’t compatible, new doc IDs are assigned on the target system, a minor performance consideration.

# Completing the Installation

## Overview

This chapter explains steps that need to be followed to complete the server installation. It covers several procedures including:

- Verify Window Manager Selection for Exceed
- Verify the System Serial Number
- Software tuning for COLD users
- Changing the F\_Maint password
- Adapting the system for Xstation use
- Verify the init.ora file
- Remove the /oratmp volume

- Install any remaining fixes
- Making system backups

## Verify Window Manager Selection

### Server Types

---

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

---

To make sure the Storage Administrator screens display correctly, follow these steps:

- 1 Click the Start menu, point to Programs, Exceed, and click on 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, make sure the Window Manager selection is set to **Native**.
- 4 If necessary, select the correct option from the pull-down menu.

- 5 Click **OK** to close the window.

## Verify System Serial Number

### Server Types

---

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 or Entry server installation.

**Application** server running WorkFlo Queue Services or SQL Services.

---

Use the **ssn** command to display the system serial number. As **root** user, enter:

**ssn**

**Important!**

The 10-digit ssn, which is assigned by FileNet, is written onto all storage media and **must** be unique for each 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.

---

## Software Tuning for COLD Users (Optional)

**Server Types**

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

---

When the following circumstances occur, the DISPLAY environment variable, normally set by the system, may 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:

- 1 Log on as **root** user. 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'll either see an empty line (Bourne/Korn shell) or an error message (C shell). In that case, you must provide a value, as follows:

- For Bourne or Korn shell, enter:

**export DISPLAY=<host\_identifier>:0**

- For 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 System for Xstation Use (Optional)

### Server Types

---

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 or Entry server installation.

**Application** server running WorkFlo Queue Services or SQL Services.

---

If you plan to run Xapex from an Xstation, you must modify certain system parameters. (The modified parameters disable your access control option and allow you to run applications from an Xstation.) 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
```

---

**Note** 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.



## Configure the System Information Messenger

### Server Types

---

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

---

The System Information Messenger is a utility that automatically collects performance statistics, license usage data, system configuration data, and software registration information from the server and sends the data to FileNet. Follow the instructions in the ***System Information Messenger Manual*** to enable and configure the software.

## Install Service Packs and Hot Fix Packs (Optional)

### Server Types

---

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

---

Now you can install any Hot Fix Packs or Service Packs that apply to Image Services 4.0 DB2 Edition. Be sure to read the accompanying README file, which contains the instructions for installing the software. Services Packs are available on CD-ROM. Hot Fix Packs are available on the FileNet Web site <http://www.css.filenet.com>.

## MSAR Systems

The Magnetic Storage and Retrieval (MSAR) storage library provides high speed and high capacity storage libraries on magnetic disk media instead of using optical media or large magnetic disk caches (Cache-less systems).

If you will be configuring and setting up an MSAR System, refer to the ***MSAR Procedures and Guidelines*** document for information.

## Make System Backups

### Server Types

---

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

---

Regular backups of the system configuration and data are essential.

For information on developing the backup and restore scripts for the MKF databases using FileNet's EBR, refer to:

- ***Image Services Enterprise Backup and Restore User's Guide***

For additional information on making backups of your system configuration, refer to:

- ***Image Services System Administrator's Handbook***
- ***Image Services System Administrator's Companion for UNIX***

## **Begin Production Mode**

This concludes the Image Services 4.0 DB2 Edition Installation and Configuration Procedures for the Solaris Operating System. The FileNet Image Services system is now ready to put into production.

# Appendix A – Adding an Application Server

This appendix describes how to add an Application server to your Image Services system. All of the steps in this appendix should be done on the Application server unless specified otherwise.

In addition to installing and configuring a new Application server, you can also use this appendix for:

- Adding services to an existing server (for example, adding Batch Entry Services to an existing Application server). See the section, **[“Add Server Services” on page 174.](#)**
- Reconfiguring an old server because the functions it performs are no longer required. (Reconfiguring an old server should be handled the same as installing and configuring a new Application server.)

## Before You Begin

This appendix assumes that FileNet Image Services 4.0 DB2 Edition and the DB2 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.

### Installation Prerequisites

Make sure the server is ready for the software installation by completing the procedures and gathering the information for the worksheet in **Chapter 2, “System Administrator Tasks,” on page 40.**

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

- If you're configuring an Application server with only Batch, Print, and/or Cache Services, which do not require RDBMS software, skip to **[“Install Image Services Software” on page 167.](#)**
- If the DB2 V8.1.x relational database software is already installed, you can also skip to **[“Install Image Services Software” on page 167.](#)**
- If you are configuring an Application server with either WorkFlo Queue Services, SQL Services, or VWServices, continue with the next section to install the DB2 software.

## Install Relational Database Software (if applicable)

### Server Types

---

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

---

### IBM DB2 V8.1.x

- For guidelines on installing the DB2 V8 RDBMS software on the Application server, refer to the FileNet **[Guidelines for Installing and Configuring DB2 Software.](#)**

## Install Image Services Software

**Server Types** Perform the steps in the section on the **Application** server.

---

Install the Image Services 4.0 DB2 Edition software on the Application server by completing the procedures in **Chapter 4, “Installing FileNet Image Services Software,” on page 84.**

At the end of that chapter there is a link to return to this appendix. Continue with the next section, and perform the procedures only on the server indicated at the beginning of each section. (You may not need to perform some of the procedures included in this appendix.)

## Configure the Root Server

**Server Types** Perform the steps in this section and its sub-sections on these servers:

---

**Root/Index** server during a Dual server installation)

---

## Root/Index/Storage Library server during a Combined server installation)

---

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

### Define the New Application 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.
- 2 With Windows running, verify you are logged on as **fns** user.
- 3 Open a new window, and enter the following command:  
  
**fn\_edit &**
- 4 Verify that the database and domain names are correct, and click **OK**. (The two-part domain name is structured as follows:<Domain>:<Organization>.)



The FileNet System Configuration Editor window displays.

- 5 From the **Procedures** tab, using the scroll bar, select the Add an Application Server procedure from the list of available procedures. (The Procedures tab opens by default upon starting the FileNet System Configuration Editor.)

---

**Note** When using the various Tabs in the FileNet System Configuration Editor window, click on a tab, complete the fields as instructed, and immediately click on the next tab, as directed.

Every screen and pop-up window has an on-line help button designed to provide information you may have about completing the screen or window. In addition, most screens can be re-sized (for example, “maximized”) to satisfy user preference and convenience.

---

- 6 Click **Run**. (A new dialog box displays.)
- 7 In the new dialog box, enter the name of the new Application server. The server name of the Application server is user-defined. Click **Next**.

- 8 At the prompt. “Is this a Windows Application Server?”, answer **Yes** if the new Application server is a Windows NT server. The default is **No**.
- 9 Enter the network address of the Application server (refer to the [“FileNet TC Worksheet” on page 69](#)). Click **Next**.
- 10 If you want to add additional Application servers to your system, click on the Procedure Tab in the System Configuration Editor window and repeat steps 5 through 9.

## Select and Configure the Relational Database Instance (if applicable)

**Important!** 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 databases.

For **DB2**, see the FileNet [Guidelines for Installing and Configuring DB2 Software](#).

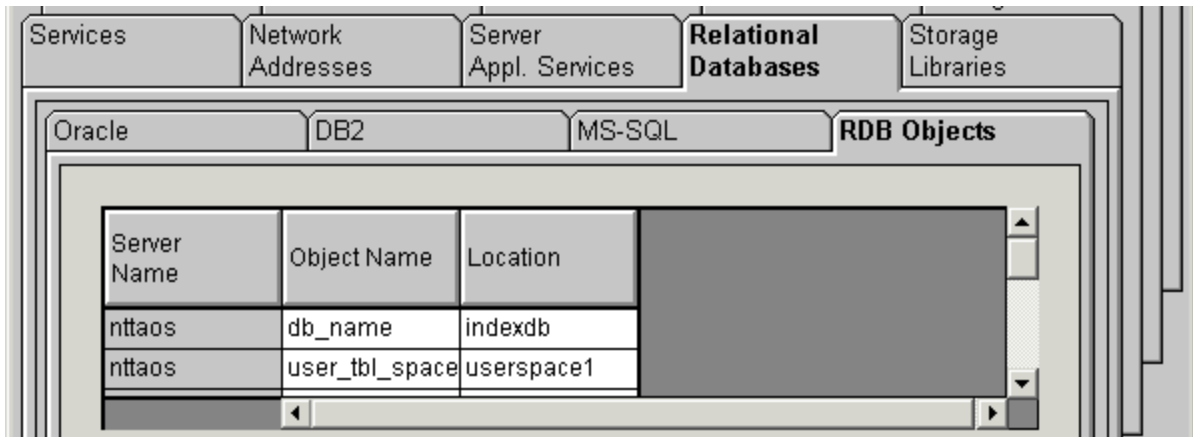
The Database Administrator has already supplied this information in

the section, **“Install Relational Database Software” on page 80** in Chapter 3.

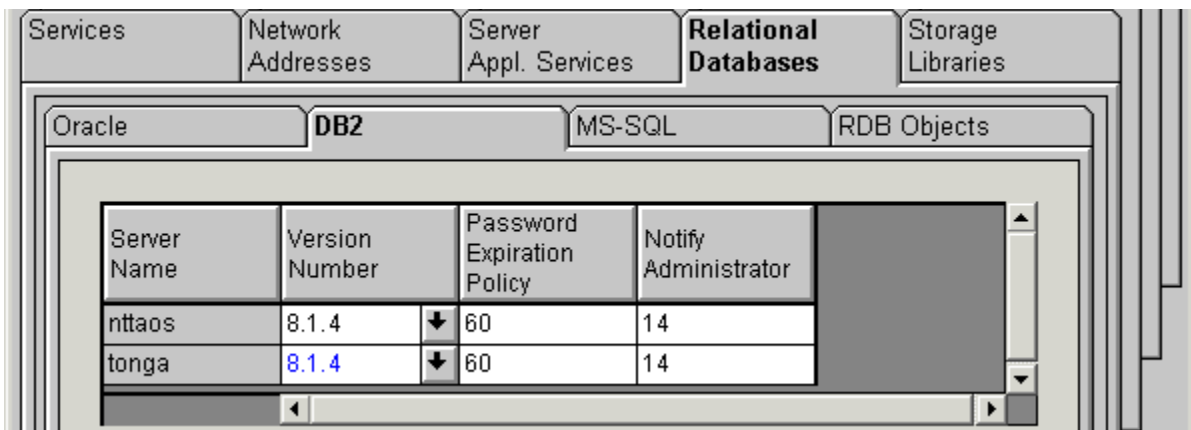
## DB2 V8.1

### Verify the Database and User Tablespace Names

- 1 Click the Relational Databases tab, then click the RDB Objects subtab.



- 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.
- On the DB2 subtab, verify the following fields:



The screenshot shows a configuration window with several tabs. The 'Relational Databases' tab is selected, and within it, the 'DB2' subtab is active. A table displays configuration details for two servers: 'nttaos' and 'tonga'. The 'tonga' server's version number is highlighted in blue. The table has columns for Server Name, Version Number, Password Expiration Policy, and Notify Administrator.

Server Name	Version Number	Password Expiration Policy	Notify Administrator
nttaos	8.1.4	60	14
tonga	8.1.4	60	14

- **Version** - must be **8.1.4** or later (DB2 version 8.1.0 plus FixPak 4a or later). DB2 version 7.2.0 is not supported at this time.
- **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.

---

**Note**

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 prior to 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.

---

**Note**

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 the day the password expires.

---

## Add Server Services

You must add the services you want to use on the Application server. (Add only the services that you need.)

---

**Note** You must configure all Application server services on the **Root** server.

---

You can add the following services:

- Batch Entry services
- Print services
- Cache services
- Structured Query Language (SQL) services
- WorkFlo Queue Services (WQS)
- VWServices

If you will be adding VWServices to this Application server, use the procedures in the appendix to install and configure the Image Services and RDBMS software, and configure a SQL Service on this Application server. After completing those procedures, see the

installation handbook for your Process Engine platform for instructions on adding VWServices to the server.

After you have added the needed services, go to the following section: **[“Rebuild the Root Server’s Configuration Files” on page 184.](#)**

### Add Batch Entry Services

- 1 On the Procedures tab, use the scroll bar to locate the Add a Service to a Server procedure from the list of available procedures.
- 2 Select the Add a Service to a Server option from the Procedure List Box, then click **Run**.

A dialog box displays prompting you for the domain name in which the Application server resides.

- 3 Select the Application server domain name.

A new dialog box displays containing a list of services that can be added to an Application server.

- 4 From the list of available services, choose Batch Entry Services.
- 5 You are prompted for dataset path for the Image Services cache on your Application server.
  - The default cache path is **/fnsw/dev/1/cache\_0**.
- 6 You are prompted for the size of the cache. (The default is 100 MB.)
- 7 You are prompted for 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**.
- 8 You are prompted for the size of the transient dataset sizes. (The defaults are as follows: transient\_db0 - 20 MB and transient\_rl0 - 40 MB.)
- 9 Respond to the Do you want to use fast batch committal? prompt by clicking either **yes** or **no**. (If you select yes, default settings are auto-



matically entered into the system. You can change the settings later if necessary.)

**Note** 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 on remote committal.

---

- 10 Next, you are prompted for the number of BES commitment processes. Choose **2** (the default) or **4**.
- 11 If this is the last service you're adding to the Application server, skip to the section, "**Exit the Configuration Editor**" on page 184.

## Add Print Services and Printer

- 1 From the Procedures tab, using the scroll bar, select the Add a Service to a Server procedure from the list of available procedures.

- 2 Click Run. (A dialog box displays prompting you for the domain name in which the Application server resides.)
- 3 Select the Application server domain name. (A new dialog box displays containing a list of services that can be added to an Application server.)
- 4 From the list of available services, choose Print Services.
- 5 You are prompted to add print services. Click **Yes**. (If you select Yes, default settings are automatically entered into the system. You can change the settings later, if necessary.)
- 6 From the Procedures tab, using the scroll bar, select the Add a printer procedure from the list of available procedures.
- 7 You are prompted to designate the new printer as the default printer. If you want the printer to be the default printer for print services, click **Yes**. Otherwise, click **No**.
- 8 Enter the printer name. Click **OK**. (The printer name can be user defined.)

- 9 Enter the Network Clearing House (NCH) Printer name (e.g., LJ5SiMX).
- 10 Enter the network address for the printer (for example, 10.0.85.245).
- 11 Select the Printer paper size.
- 12 Select the printer Eject Tray (default: Default)
- 13 You are prompted to add additional printers. (Add additional printers as necessary by repeating steps 6 through 12.)
- 14 If this is the last service you're adding to the Application server, skip to the section, **[“Exit the Configuration Editor” on page 184.](#)**

### Add Cache Services

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

- 1 From the Procedures tab, using the scroll bar, select the Add a Service to a Server procedure from the list of available procedures.
- 2 Click Run. (A dialog box displays prompting you for the domain name in which the Application server resides.)
- 3 Select the Application server domain name. (A new dialog box displays containing a list of services that can be added to an Application server.)
- 4 From the list of available services, choose Cache Services.
- 5 Click **OK**.
- 6 If this is the last service you're adding to the Application server, skip to the section, **[“Exit the Configuration Editor” on page 184.](#)**

### **Add Structured Query Language (SQL) Services**

Use this procedure to add SQL services.

**Note** If you add SQL services to your system, you **MUST** install RDBMS software on the Application server, or on a site-controlled remote RDBMS server. Continue adding the necessary services to your system. After you have added all of the needed services, skip to **“Exit the Configuration Editor” on page 184.**

---

- 1 Click on the Procedures tab in the FileNet System Configuration Editor window.
- 2 Select the Add a Service to a Server option from the Procedure List Box, then click Run.
- 3 Click on the domain name of the Application server.
- 4 Choose SQL Services.
- 5 You may also be prompted for:
  - f\_sw password
  - f\_maint password
  - f\_sqi password

- DB2 Database Alias Name
- User Tablespace Location

- 6 If this is the last service you're adding to the Application server, skip to the section, **“Exit the Configuration Editor” on page 184.**

### Add WorkFlo Queue Services (WQS)

Follow these steps to add WorkFlo Queue Services (WQS).

---

**Note** 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. Continue adding the necessary services to your system. After you have added all of the needed services, skip to **“Exit the Configuration Editor” on page 184.**

---

- 1 Click on the Procedures tab in the FileNet System Configuration Editor window.

- 2 Select the Add a Service to a Server option from the Procedure List Box, then click Run.
- 3 Click on the domain name of the Application server.
- 4 Choose WorkFlo Queue Service.
- 5 You may also be prompted for:
  - f\_sw password
  - f\_maint password
  - f\_sqj password
  - DB2 Database Alias Name
  - User Tablespace Location
- 6 If this is the last service you're adding to the Application server, skip to the section, **[“Exit the Configuration Editor” on page 184.](#)**

## Add VWServices

See the installation handbook for your Process Engine platform for instructions on adding VWServices to the server.

## Exit the Configuration Editor

- 1 From the System Configuration Editor window, click on the File pull down menu and click on the Exit option.
- 2 You will then be asked if you want to save the changes you have just made to the current configuration database before you exit. Click on the **Yes** button to save the configuration and exit the System Configuration Editor.

## Rebuild the Root Server's Configuration Files

### Server Types

---

Perform the steps in this section on the **Root server** only.

---

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



**initfnsw -y stop**

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

**fn\_build -a**

This will generate configuration files used by components of the Image Services software. Running **fn\_build** automatically creates the Network Clearinghouse database file (`/fnsw/local/NCH_db0`) if the program does not find an existing file. **fn\_build -a** also checks the validity of the software license.

- 3 Make sure this command runs successfully by checking that no errors have occurred. (Any errors that occurred must be corrected before running the command again.)
- 4 Start the Image Services software by entering:

**initfnsw start**

- 5 Verify that the FileNet Image Services software started successfully by entering:

## whatsup

Review the list of processes that display, and verify that the necessary processes have started on the Root server.

# Configure the Application Server

## Server Types

---

Perform all of the procedures in this section (and associated sub-sections) on the **Application server**. FileNet Image Services software must be up and running on the Root server.

---

Now you need to configure the Application server for compatibility with the services you added earlier on the Root server.

The procedures in this section assume that the same version of Image Services software is installed on both the Root server and the Application server.

**Important!**

Even though RDBMS software may already be installed, there must be no RDBMS database or NCH database already existing on the Application server.

---

**Note**

Make sure Image Services is running on the Root server, and **not** running on the Application server. (You can run **whatsup** on the Root server.)

---

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

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

## Set Ownerships and Permissions

In this section, you create all directories needed for the installation using **fn\_setup**. In addition, you will set the appropriate file ownerships and permissions for the directories. You will be asked for system-spe-

---

cific information, refer to the **“FileNet TC Worksheet” on page 69** for the appropriate information.

- 1 Verify that you are logged on as **root** user (**the first time**).
- 2 Run the **fn\_setup** utility by entering the following command:

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

Several prompts display. Answer the prompts with appropriate information for this system.

- 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:FileNet]:
```

- 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 [11008016xx]:
```

---

**Important!**

The 10-digit ssn, which is assigned by FileNet, is written onto all storage media and **must** be unique for each 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.

---

- 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 of these services, select 0=none; 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]:
```

---

**Note**

If you're 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.

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

- 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:  clark:FileNet
  SSN:  11008016xx
  Relational database type:  DB2
  Relational database home:  /home/fnsw/sqllib
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: Creating file /fnsw/local/sd/root_station
fn_setup: Creating file /fnsw/local/ssn
fn_setup: Creating file /fnsw/local/sd/nch_domain
fn_setup: Calling fn_util initnch
fn_setup: Changing permission on FileNet software and
databases
```

On a new installation, you will see that the NCH\_db0 is zeroed out as **fn\_setup** initializes the nch\_db the first time. (The **fn\_setup** program modifies the **nch\_update** after NCH\_db initialization.)

When **fn\_setup** is finished, you may 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 Application Server

---

**Note** Make sure that the FileNet software is running on the Root server. (You can run **whatsup** on the Root server.)

---

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

---

**Note** There must be no NCH database already existing on the Application server.

---



- 1 As **fns** user, verify that the FileNet Image Services software is not running. If the software is running, enter the following command:

```
initfns -y stop  
killfns -DAy
```

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

```
fn_build -a
```

This command takes data from the Configuration Database (CDB) on the Root server to construct the configuration files on the Application server. Running **fn\_build** automatically creates the Network Clearinghouse database file (/fns/local/NCH\_db0) if the program does not find an existing database.

Make sure this command runs successfully by checking that no errors have occurred. (Any reported errors must be corrected before running the command again.)

- 3 Verify that the following files do not exist on your Application server:

- /fnsw/sd/local/root.station
- /fnsw/local/sd/1/as\_conf.s

If the files exists, delete them from the Application server only, and run **fn\_build -a** again.

## Create Logical Volumes

### Server Types

---

Perform all of the procedures in this section (and associated sub-sections) on the **Application server**.

---

To create the appropriate volumes, complete the following general instructions. (These general instructions are valid for the partitions shown below.)

- 1 As **root** user, launch the Volume Manager.
- 2 Select the appropriate disk group (for example, fndg).

- 
- Tip** If you wish to place the file system on a specific disk, click the disk on which you want to configure the file system.
- 
- 3 Depending on the hardware available on your system, select either Simple, Striped, or RAID.
  - 4 Enter the appropriate information for the volume you are creating. For example, while creating the **fn\_cache0** volume, you would enter the following information for the volume.

Volume Option	Setting
Volume Name	fn_cache0
Volume Size	100m
Usage	fsgen
Create Log Subdisk	no
Create Filesystem	no

- 5 Using the general procedure above, create the necessary volumes by entering the appropriate information for each volume needed in your system.

You may place the volume on any disk with available space. However, be aware that these Image Services data bases are raw data volumes. The table below shows the volume sizes recommended by FileNet, and provides space to record your own volume sizes.

Volume Name	Recommended Size	Your Size (in MB)
fn_cache0	100m	
fn_transient_db0	40m	
fn_transient_rl0	72m	

### Change Volume Settings

After you have created the appropriate volumes, you must configure the remaining volumes for proper operation. (Use the settings shown in Step 3 for each volume you modify.)

- 1 Select the **fndg** disk group.
- 2 Select the volume you wish to configure (for example, fn\_cache0).
- 3 A new menu displays. From the new menu change the following settings:

Parameter	Setting
User	fnsu
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 Image Services

**Server Types** Perform the steps in this section on the **Application server**.

---

In this section 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.

- 1 As **root** user, enter the following commands to create the `/fnsw/dev/1` directory and change to that directory:

```
mkdir -p /fnsw/dev/1
cd /fnsw/dev/1
```

---

**Note** The `/dev` and/or `/1` directories may already exist. If you get a message similar to the following: `mkdir: cannot create dev: File exists`, one or both of the directories already exist.

---

- 2 Create and edit a file called **filenet.links** using your preferred editor (for example, **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:

```
In -s /dev/vx/<disktype>/<diskgroup>/<logical volume> dbname
```

where **<logical volume>** is the disk location of the partition and **dbname** is the data base name. For example:

```
In -s /dev/vx/rdisk/fndg/fn_cache0 cache0
```

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.)

---

**Note** In the **filenet.links** file, you **MUST** have unique logical volume assignments for all partitions.

Make sure 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 should look similar to the following:

```
In -s /dev/vx/rdisk/fndg/fn_cache0 cache0
In -s /dev/vx/rdisk/fndg/fn_transient_db0 transient_db0
In -s /dev/vx/rdisk/fndg/fn_transient_rl0 transient_rl0
```

- 3 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 Execute the **filenet.links** file.
- 6 Examine the contents of the `/fnsw/dev/1` directory.



**Note** To display the volume owner and group use information, enter the following command:

```
ls -lL
```

---

The directory should contain the linked directories specified in the **filenet.links** file. If not, verify the permission on the **filenet.links** file, and execute the file again.

## Initialize Application Server Datasets

**Server Types** Perform procedures in this section (and associated sub-sections) on the **Application server**.

---

**Note** If there is **NO** relational database software, either server or client, installed on this Application server, skip to **“Initialize the Transient Database” on page 204.**

If relational database software **IS** installed on this Application server, continue with the following steps.

---

Skip to the appropriate section:

- [“On Application Servers with DB2 Client Software” on page 202](#)
- [“Initialize the Transient Database” on page 204](#)

### **On Application Servers with DB2 Client Software**

---

**Note** This section applies only to remote DB2 instances.

---

Ask the **Database Administrator** to start the DB2 software before initializing the FileNet databases.

Make sure the DB2 Home and Instance environment variables are set appropriately for both **root** and **fns** users. As each user, enter the following commands:

```
echo $DB2_HOME  
echo $DB2_INST
```

Compare the output of the above commands to the settings determined in the FileNet [\*\*\*Guidelines for Installing and Configuring DB2 Software\*\*\*](#). If the DB2\_HOME and the DB2\_INST are not set correctly, ask the Database Administrator to have the settings changed.

## Initialize the RDBMS and FileNet Databases on the Application Server

### Initialize the DB2 Database

If **DB2** software is installed on this server (servers with WQS or SQL services), enter the following command to initialize all RDBMS databases configured for use with this server:

```
fn_build -a  
fn_util initrdb
```

This program may take about 10 or 15 minutes. A message displays as the new database partitions are initialized and zeroed out.

## Initialize the Transient Database

As **fns**w user, enter the following command to initialize all FileNet databases configured on this server:

```
fn_util init
```

The **fn\_util init** will initialize the FileNet databases for this Application server. After the databases are initialized, the program checks for the presence of transient.ddl file in the /fns/w/local/sd/1 directory.

## Bring Up FileNet Software

### Server Types

---

Perform all of the procedures in this section (and associated sub-sections) on the **Application server**.

---

- 1 Logon as **fns**w user (if you aren't already), and start X Windows (if you have not already done so).
- 2 Stop all FileNet processes by entering the following command:

### killfnsw -DAy

- 3 Start the updated FileNet Application server software by entering:

### Xtaskman &

The FileNet Task Manager interface displays.

### CAUTION

---

If RDBMS software is installed on this Application server, be sure to start it before attempting to start the FileNet Image Services for the first time. If the RDBMS software is not available when the Image Services software starts, the Image Services software will fail and will display error messages. If you receive Image Services error messages, start the RDBMS software and restart the Image Services software.

---

- 4 After the **TM\_daemon.exe** message displays in the Process table, select the Monitor menu.
- 5 From the Monitor menu, select the Event Logs option. (The FileNet Event Logs window displays.)

6 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 Task Manager window, but do not close the Event Logs window.

7 From the FileNet Task Manager window, select START.

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

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

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

## **Modify the `/etc/inittab` File (Optional)**

You must edit again the `/etc/inittab` file to allow the Image Services software to automatically start during the boot process.

**Note** If you do not know whether the relational database software will be started when the Image Services software starts, you may choose not to uncomment the line in the inittab file.

If the Relational Database is not available when the Image Services software starts, the Image Services software generates error messages. If you receive error messages of this type, start the DB2 software, and then restart the Image Services software.

---

- 1 Change to the /etc directory by entering the following command:

```
cd /etc
```

- 2 Using a preferred editor (for example, **vi**), 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. Save the change and exit the text editor.

## Reset File Ownerships and Permissions

After you have created the Image Services datasets, you must reinitialize the RDBMS permissions.

- 1 As **root** user, enter the following command:

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

- 2 At each prompt, accept the current setting. After you have finished, continue with the next section.

## Make System Backups

### Server Types

---

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

---

Make complete system backups for the Root/Index server and the Application server. To make complete backups of your system configuration, refer to the following documents:

- ***Image Services System Administrator's Handbook***



- *Image Services System Administrator's Companion for UNIX*
- *Image Services Enterprise Backup and Restore*

## Begin Production Mode

After you've backed up the system, the Application server is ready to be put into production.

# Appendix B – Adding a Storage Library Server

This Appendix describes how to configure multiple Storage Library servers on your system, and it is structured for use with some of the procedures already documented in the main body of this installation procedure. Where necessary, this appendix references procedures (by section name and page number) of the procedure you must perform. Some procedures necessary for adding multiple Storage Libraries are not documented elsewhere and have been included (in the appropriate sections) only in this appendix.

## Before You Begin

To successfully complete the instructions in this appendix, you must have already gathered the information requested in the “FileNet TC Worksheet” on page 69 relevant to the Storage Library server(s).

If you have not completed the sections referenced above for all Storage Libraries, complete those sections before beginning the referenced sections or procedures included in this appendix.

## Multiple Optical Library Server Uses

FileNet storage library software files and retrieves document images. The software controls every activity in the optical disk library to make sure that all documents are stored and retrieved from the optical disks in an orderly and consistent manner.

The Storage Library server keeps track of the name and location of every document stored in the optical disk 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 can be setup on a system to enhance capacity and/or performance. Before you install and configure more than one Storage Library server on your system, review the following considerations:

- 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 will always be written to the same Storage Library server. Note that Database Maintenance will not let you select destination Storage Library servers for a transaction log family.
- If you already have as many optical disk 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 may need another server in order to add an optical disk library to the system and to allow the system to handle more disks on-line.
- If the CPU, I/O bus, or magnetic disks on a Storage Library server are already at their maximum throughput, adding an optical library server will increase performance. If, however, the existing server has not reached its performance limit, adding another optical library server will decrease performance slightly because of the overhead of controlling a second server.

---

## Prepare Storage Library Server(s)

### Server Types

---

Perform the referenced procedures listed below, in the order in which they appear, only on the **Storage Library server(s)** (unless instructed otherwise).

---

### Note

---

You need not install RDBMS software on Storage Library server(s). 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.

---

- 1 Modify the server resources (if you have not already done so) by completing **[“Check the Operating System Kernel Limits” on page 42.](#)**
- 2 Verify that the /etc/host file contains the correct host names for the Root/Index and the Storage Library server(s) by completing **[“Add Peer Systems to the /etc/hosts File” on page 50.](#)**

- 3 Create the **fns** user and the **fnusr**, **dba**, **fnadmin**, and **fnop** groups by completing the relevant portion of [“Create FileNet Users and Groups” on page 53.](#)
- 4 Set the **fns** user password by completing the relevant portion of [“Set Up Password for fns user” on page 57.](#)
- 5 Install the Veritas volume management software on the Storage Library server(s) by completing [“Install Volume Management Software” on page 58.](#)
- 6 Create the Image Services file systems by completing [“Create Logical Volumes for Image Services” on page 59.](#)

## Install Image Services Software

- 1 Install the Image Services 4.0 DB2 Edition software on the Storage Library server(s) by completing [“Install the IS Software” on page 85.](#)
- 2 Set the user environment setting by completing [“Set Up the fns Environment” on page 92,](#) [“Set Up the root Environment](#)

**(Optional)**” on page 94, and **“Verify/Modify root User Parameters”** on page 95.

- 3 Modify the /etc/inittab file by completing **“Modify the /etc/inittab File”** on page 106.
- 4 Reboot the server by entering the following commands:

```
shutdown -i6 -g0 -y
```

The system displays several status messages and reboots automatically.

- 5 Continue with the next section. Perform the procedures only on the server indicated at the beginning of each section. (You may not need to perform some of the procedures included in this appendix.)

## Configure the Root Server

### Server Types

---

Perform all of the procedures in this section (and associated sub-sections) on the **Root server**, unless specifically instructed to perform them on a different server.

---

## Clear the Transient Database

You must clear the transient database to make sure that any batches not yet committed are not lost while you configure the Storage Library server.

- 1 Verify that the FileNet Image Services software is up and running by entering the following command:

**whatsup**



You will receive a display similar to the following:

PROCESSES							
USER	PID	PPID	C	STIME	TTY	TIME	CMD
fns	12427	1	0	4:54:16	-	0:00	COR_Listen -px -s5 -d20
fns	21133	1	0	4:54:16	-	0:00	COR_Listen -px -s1099
fns	21385	1	0	4:54:16	-	0:00	COR_Listen -pt -d20
fns	22708	19844	0	4:55:18	-	0:00	CSM_daemon
fns	14810	1	0	4:58:16	-	0:00	CSMs
fns	15256	1	0	4:54:43	-	0:00	DOCs
fns	16275	1	0	4:54:14	pts/1	0:00	INXbg -s IndexServer
fns	16515	1	0	4:54:55	-	0:00	MKF_clean
fns	11420	1	0	4:54:53	pts/1	0:00	PRI_daemon
fns	12193	1	0	4:55:10	-	0:00	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 the following command:

## CSM\_tool

**Note** 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 at the **CSM\_tool** prompt:

```
st
```

No locked objects should display in any cache. (Locked objects represent uncommitted batches, unwritten images, and pending print jobs.)

**Note** If you have any FAX servers, there will be two locked objects per FAX server in `print_cache`. You will need to configure Print Services as described later in this manual to rebuild the `print_cache`.

---

- 6 Type the following to quit the **CSM\_tool**:

```
q
```

## Add Storage Library Server(s)

- 1 Logon as **fns** user, 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 domain information is correct. (The two-part domain name is structured as follows: <Domain>:<Organization>.)
- 4 Click on the Procedures tab in the FileNet Image Services System Configuration Editor window.
- 5 Select the Add a Storage Library Server procedure from the Select a procedure to run list box, then click Run.
- 6 Enter the name of the server.
- 7 Enter the domain name of the Storage Library server.

- 8 Enter the network address of the Storage Library server.
- 9 Enter the path for the cache dataset (default: /fnsd/dev/1/cache0).
- 10 Enter the cache dataset size.
- 11 Enter the path for the transient dataset (default: /fnsd/dev/1/transient\_db0).
- 12 Enter the dataset size for the transient dataset.
- 13 Enter the path for the transient database redo log (default: /fnsd/dev/1/transient\_rlog).
- 14 Enter the dataset size for the transient database redo log.
- 15 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.)

**Note** 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 on remote committal.

---

- 16 You are prompted for the number of BES commitment processes. (Choose 1 - 4.)
- 17 Enter the path for the permanent dataset (default: /fnsw/dev/1/permanent\_db0).
- 18 Enter the dataset size for the permanent dataset.
- 19 Enter the path for the permanent database redo log (default: /fnsw/dev/1/permanent\_r10).
- 20 Enter the dataset size for the permanent database redo log.

- 21** You can make sure you have entered the information correctly by clicking on the Network Addresses tab in the FileNet Image Services System Configuration Editor window. You should see the Storage Library server listed.

Click on the Datasets tab to see the datasets you added to the Storage Library server including cache0, transient\_db0, transient\_rl0, permanent\_db0, permanent\_rl0. (In addition, click on Server Application Services tab; you should see the Storage Library server listed.)

- 22** From the FileNet Image Services System Configuration Editor window, Click on the File pull down and click on the Exit option.
- 23** You will then be asked if you want to save the changes you have just made to the current configuration database before you exit. Click on the **Yes** button to save the configuration and exit the FileNet Image Services System Configuration Editor.

## Rebuild Configuration Files on Root Server

- 1 Logon as **fns** user.
- 2 Verify that the FileNet Image Services software is not running. If the software is running, enter the following command:

```
/fns/bin/fn_setup
```

Accept the default value at each prompt.

- 3 Enter the following command:

```
initfns -y stop
```

- 4 Enter the following command to build the system configuration files:

```
fn_build -a
```

This will generate configuration files used by components of the Image Services software. Running **fn\_build** automatically creates the Net-

work Clearinghouse database file (/fnsw/local/NCH\_db0) if the program does not find an existing file.

Make sure this command runs successfully by checking that no errors have occurred.

- 5 Start the X Windows environment (if you have not already) by entering the following command:

**xinit**

- 6 Start the FileNet application software by entering:

**Xtaskman &**

The FileNet Task Manager interface displays.

- 7 From the FileNet Task Manager window, select RESTART.

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



- 8 Select the CLOSE button. (The Current Status window closes.)
- 9 Review the contents of the Event Log window to make sure that there are no error messages from the software startup.

---

**Note** In the future, when you boot the server, the FileNet software will start up automatically because the `/etc/inittab` file has been modified to contain an entry to start the FileNet software.

If you have configured an Optical Disk Library, but haven't physically connected the hardware, you may see the error tuple 30,0,2 after the system boots. Ignore the error message, the condition is corrected after the hardware is connected.

---

## Configure Storage Library Server(s)

### Set File Ownerships and Permissions

#### Server Types

---

Perform the steps in this section on the **Storage Library server(s) you are adding**.

---

In this section, you use the **fn\_setup** tool to set the file ownership and permissions on the **Root** server. You will be asked for system-specific information.

- 1 Logon as **root** user.
- 2 Run the **fn\_setup** utility by entering the following command:

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

Answer the prompts with information related to your system.

- 
- a The NCH server is the generally the Root server. On a Storage Library server, select 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. On a Storage Library server, enter the name of the Root server.

```
Enter NCH server name [clark:FileNet]:
```

- 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 [11008016xx]:
```

**Important!**

The 10-digit ssn, which is assigned by FileNet, is written onto all storage media and **must** be unique for each 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.

---

- d Relational databases are only configured on servers with Index services, WorkFlo Queue Services (WQS), VWServices, or SQL services. On a Storage Library server, select **0**=none.

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

- 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: clark:FileNet
SSN: 11008016xx
Relational database type: none
Do you want to continue?
```

---

Press **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.

As `fn_setup` creates files and changes permissions, a series of messages displays on your screen to indicate its progress.

For example:

```
fn-setup: Creating file /fnsw/local/setup_config
fn-setup: Creating file /fnsw/local/sd/root_station
fn-setup: Creating file /fnsw/local/ssn
fn-setup: Creating file /fnsw/local/sd/nch_domain
fn-setup: Running "nch_update clark:FileNet"
fn-setup: Changing permission on FileNet software and
databases
```

On a new installation, you will see that the `NCH_db0` is zeroed out as **fn\_setup** initializes the `nch_db` the first time. (The **fn\_setup** program modifies the **nch\_update** after `NCH_db` initialization.)

## Build and Initialize the Storage Library Server

**Server Types** Perform all of the procedures in this section on all of the **Storage Library servers** on the system.

---

This procedure will build the Storage Library server's configuration files and initialize the new server. The same version of Image Services software must already be installed on both the Root server and new Storage Library server(s). There must also be no NCH database already existing on the new Storage Library server(s).

**Note** Make sure that the FileNet software is running on the Root server before proceeding. (You can do a **whatsup** on the Root server.)

---

- 1 Logon as **fns** user.
- 2 Verify that the FileNet Image Services software is not running. If the software is running, enter the following command:

```
initfns -y stop  
killfns -DAy
```

- 3 Enter the following command to build the system configuration files:

```
fn_build -a
```

This will generate configuration files used by components of the Image Services software. Running **fn\_build** automatically creates the Network Clearinghouse database file (/fnsw/local/NCH\_db0) if the program does not find an existing database.

Make sure this command runs successfully by checking that no errors have occurred.

## Create Logical Volumes

### Server Types

---

Perform all of the procedures in this section on all of the **Storage Library servers** on the system.

---

You can use the command **vxdiskadm** to create the new volume group, or you can use the graphical virtual administrator and storage administrator tools.

Create the following file systems and volumes using either the virtual administrator or the storage administrator. The sizes shown in Table B-1 are **minimum** sizes.

---

**Note** **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 should 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 B-1 FileNet Volumes

Volume Name	Mount Point	Minimum Size	User	Group	Mode
fn_cache0	n/a	100m	fnswh	fnusr	664
fn_permanent_db0	n/a	100m	fnswh	fnusr	664
fn_permanent_rl0	n/a	72m	fnswh	fnusr	664
fn_transient_db0	n/a	40m	fnswh	fnusr	664
fn_transient_rl0	n/a	72m	fnswh	fnusr	664

## Set up Links Required For Image Services

### Server Types

Perform all of the procedures in this section on all of the **Storage Library servers** on the system.

In this section you will link the Image Services data base names to their partitions by creating the **filenet.links** file and entering the correct soft link information into the new file.

- 1 Verify that you are logged on as **root** user.
- 2 Enter the following commands to create, and go to the `/fnsw/dev/1` directory:

```
mkdir -p /fnsw/dev/1
cd /fnsw/dev/1
```

---

**Note** The `/dev` and/or `/1` directories may already exist. If you get a message similar to the following: `mkdir: cannot create dev: File exists`, one or both of the directories already exist. Continue.

---

- 3 Create (and edit) the **filenet.links** file using your preferred editor (for example, **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:

```
In -s /dev/vx/disktype/diskgroup/<logical volume> dbname
```

where **<logical volume>** is the raw disk location of the partition and **dbname** is the data base name. For example:

```
In -s /dev/vx/rdisk/fndg/fn_cache0 cache0
```

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.)

---

**Note** In the **filenet.links** file, you MUST have unique logical volume assignments for all partitions.

Make sure 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 should look similar to the following:

```
In -s /dev/vx/rdisk/fndg/fn_cache0 cache0
In -s /dev/vx/rdisk/fndg/fn_permanent_db0 permanent_db0
In -s /dev/vx/rdisk/fndg/fn_permanent_r10 permanent_r10
In -s /dev/vx/rdisk/fndg/fn_transient_db0 transient_db0
In -s /dev/vx/rdisk/fndg/fn_transient_r10 transient_r10
```

- 4 Save the changes.
- 5 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.

- 6 Execute the **filenet.links** file.
- 7 Examine the contents of the `/fnsw/dev/1` directory.

**Note** To display the volume owner and group use information, enter the following command:

```
ls -lL
```

---

The directory should contain the linked directories specified in the **filenet.links** file. If the /fnsw/dev/1 directory does not contain the links as shown above, verify and, if necessary, change the permissions on the **filenet.links** file. Execute the links file again.

## Start Databases and Network Software

**Server Types** Perform all of the procedures in this section on all of the **Storage Library servers** on the system.

---

**Note** Before proceeding with this procedure, verify that the Image Services software is running on the Root server.

---

- 1 On the Storage Library server, logon as **fnsw** user.

- 2 Enter 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.)

---

**Note** 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, you need to run the following commands to start the permanent database and update the scalar numbers table:

**fn\_util startdb  
SNT\_update**

Document Services will not function until this problem is resolved.  
After SNT\_update is finished, run fn\_util init again.

---

- 3 Start the FileNet application software by entering:

**Xtaskman &**

The FileNet Task Manager interface displays.

- 4 From the FileNet Task Manager window, select RESTART.
- 5 Run a start database script on every Storage Library server to start up the MKF databases and the Network Clearinghouse background processes that are needed during the installation process.
- 6 Enter the following command on ALL Storage Library server(s):

**fn\_util startdb**

Running **fn\_util startdb** shuts down the FileNet Image Services software and starts up all FileNet databases present on the Storage Library server, including transient, permanent and index.

## Add New Storage Library Server(s)

### Server Types

---

Perform all of the procedures in this section on all of the **Storage Library servers** on the system.

---

After you have executed 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.

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 presence of the new server(s). The **add\_osvr** utility updates the family and surface locator tables on the Document Locator server and the family disk table on each new Storage Library server.



1 At the system prompt, enter the following command:

**Xtaskman &**

2 Click Backup. (This starts the COR.listen processes.)

3 Obtain the server id assigned to each new Storage Library server using one of the following bulleted methods:

- The server ID is assigned and viewed using the **fn\_edit** utility; run **fn\_edit**. Click on the Server Application Services tab, then the Scheduling sub-tab. Scroll to the right to see the OSAR ID for each server.
- Access the `/fnsw/local/sd/nch_dbinit` file on the Root server. Storage library servers are numbered OsarServer1, OsarServer2, etc. The server ID is the second number following OsarDesc. In the

---

following example for OsarServer2 the Storage Library server ID number is 4.

```
creatobj OsarServer2
additem OsarServer2 OsarService "OSAR Service"
additem OsarServer2 addressList [0.080034001086.5]
[136.0.0.131]
additem OsarServer2 OsarDesc 0 4 DocServer page_cache4
```

- Run **nch\_tool**, and list the properties to view the Storage Library server id in the NCH database. For the above example, the **nch\_tool** command would be:

**listprop OsarServer2**

- 4 To run **add\_osvr**, enter the following 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 are not the station numbers.) Enter a space between each server id.

Entering **add\_osvr** with no parameters displays a description of the program and a usage statement. After the **add\_osvr** utility has completed successfully, you will see the following prompt:

```
program terminated successfully
```

---

**Note**

If the system crashes or is rebooted 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 successfully. If the process cannot be completed, restore your system from the backup tape.

---

---

## Restart FileNet Software

### Server Types

---

Perform all the steps in this section on all of the **root server** first and then on each **Storage Library server** added to the system.

---

Perform the procedure in this section on the Root server first, and then on each Storage Library server added to the system.

- 1 On the Storage Library server, logon as **fns** user (if you aren't already).
- 2 Start the FileNet application software by entering:

**Xtaskman &**

The FileNet Task Manager interface displays.

- 3 From the FileNet Task Manager window, select RESTART.

You will receive system messages in the Current Status window as the FileNet software starts.

---

## Connect Storage Library Device(s)

### Server Types

---

Perform all of the procedures in this section on all of the **Storage Library servers** on the system.

---

- 1 Stop the FileNet 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 the **root** user.

**CAUTION**

If an HP 600FX (configured in multi-LUN mode) is connected to the 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 At the system prompt, enter the following command:

**reboot -- -r**

All currently connected optical devices should be configured automatically after the system restarts.

- 7 After the server finishes booting, logon as **root** user.

- 8 Verify that all devices are configured properly. List the currently installed optical device drivers by entering the following commands:

**ls /dev/fnsod\***

You should receive output similar to the following:

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

## Configure the Storage Library Device(s)

### Server Types

---

Perform all of the steps in this section on **all Storage Library servers to which you added optical peripherals.**

---

Perform the procedure in this section on all Storage Library servers to which you added optical peripherals.

- 1 Logon as **fns** user, 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 Select 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 up and running again, log on as **fns** user and launch **Xapex**. Use Database Maintenance (on any server) to re-save all media families, and resolve any warning or error messages that appear.
- 11 Use the **vi** 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

### Server Types

---

Perform all of the steps in this section on **all Storage Library servers to which you added optical peripherals**.

---

- 1 Change to the /etc directory by entering the following command:  
  
**cd /etc**
- 2 Using a preferred editor (for example, **vi**), open and edit the inittab file.

- 3 Locate the following line:

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

- 4 Remove the : sign from the beginning of the line. Save the change and exit the text editor.

## Storage Library Server Utilities

This section briefly describes the function and usage of the following Storage Library server utilities and is not part of the procedure:

- **move\_disk**: allows you to move optical disks from one optical disk library to another.
- **del\_osvr**: allows you to remove a Storage Library server from your system.

The utilities described in this section need not be used on any Storage Library server unless a specific need exists. For more information about Storage Library server utilities, refer to the [\*\*\*System Tools Reference Manual\*\*\*](#).

### **CAUTION**

---

Whenever any change in Storage Library configuration occurs—especially when a Storage Library is deleted—it's extremely important to re-save all the media families manually and resolve any errors. See the Database Maintenance chapter of the [\*\*\*System Administrator's Handbook\*\*\*](#) for information on saving media families.

---

## Moving Disks Between Storage Library Servers (Optional)

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.

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.

To run **move\_disk**, follow these steps:

- 1 Eject all disks to be moved from the Optical Disk Library as described in the “Storage Library Control” chapter of the *[Image Services System Administrator’s Handbook](#)*.
- 2 Run the **move\_disk** utility from the source Storage Library server attached to the Optical Disk Library where the disks currently reside. Enter a command structured similar to the following:

```
move_disk <surfid 1> ... <surfidn> <dest_server_name>
```

where **<surfid 1> ... <surfidn>** 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 *[Image Services System Administrator’s Handbook](#)*.

## Deleting a Storage Library Server (Optional)

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.

The **del\_osvr** utility does the following:

- Checks the Storage Library server 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. Refer to the *[Image Services System Tools Reference Manual](#)* for information about **WRT\_clean**.
- 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, past, and future 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. To use **del\_osvr**, perform the following steps:

- 1 Backup the system to tape.

**CAUTION**

---

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 incomplete attempt to delete a Storage Library server.

---

- 2 Make sure there are no pending write requests for the Storage Library server to be deleted. If pending write requests exist, delete them.
- 3 Eject all disks to be moved from the Optical Disk Library(s) of the Storage Library server to be deleted.
- 4 Bring down the FileNet software on all Storage Library servers by entering:



**initfnsw -y stop**

- 5 Run the **fn\_util startdb** on every Storage Library server to start up the permanent and transient databases by typing the following:

**fn\_util startdb**

- 6 On each server, enter a command similar to the following:

**del\_osvr <svrid1> <svrid2> ... <svridn> <dest\_server\_num>**

where **<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 may run the **move\_disk** utility to move optical disks, and you may 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.

## Make System Backups

Make complete system backups for the Root/Index server and Storage Library server(s). To make complete backups of your system configuration, refer to the following documents:

- [\*Image Services System Administrator's Handbook\*](#)
- [\*Image Services System Administrator's Companion for UNIX\*](#)
- [\*Image Services Enterprise Backup and Restore\*](#)

After you have backed up the system configuration on the appropriate server, you will have successfully added multiple Storage Library servers to your system.

# Appendix C – Installing Veritas Volume Manager

## Install Volume Manager On-line Documentation

Insert the Veritas or Sun Volume Manager CD-ROM into the CD-ROM drive.

### Veritas Volume Manager and Sun StorEdge Volume Manager 3.x and Later

- 1 As **root** user, use the `pkgadd` command to install the documentation.  
For example:

```
pkgadd -d /cdrom/cdrom0/<os_level>/pkgs VRTSvmdoc
```

- 2 Answer **yes** to the `setuid/setgid` product names confirmation.
- 3 Answer **yes** to all the remaining prompts.

- 4 The volume manager installation documentation and user guide are located under `/opt/VRTSvxvm/docs`.
- 5 Skip to the section, [“Install Volume Manager Software” on page 261](#).

## Sun Enterprise Volume Manager

- 1 Use the `pkgadd` command to install the documentation. For example:  

```
pkgadd -d /cdrom/cdrom0/Product SUNWasevm
```
- 2 Answer **yes** to all the remaining prompts.
- 3 Go to Answerbook to access the installation documentation and the user's guide.

## Install Volume Manager Software

Follow the steps in the Volume Manager installation documentation to install the volume manager and storage administrator.

**Note** The Volume Manager software requires that at least one disk be put into rootdg to complete the volume manager initialization.

---

When running vxinstall, select the following options:

- **Custom Installation**
- **Encapsulate the root disk** (accept the defaults for the diskname) or specify a different disk to be put into the rootdg.
- **Leave these disks alone** (leave remaining disk alone, these will be added later)

FileNet recommends a separate volume group, other than the rootdg, for the FileNet software.

The name of the volume group can be anything the customer wishes, such as fndg or fnswdg.

You can use the command **vxdiskadm** to create the new volume group, or you can use the graphical virtual administrator (vxva) and storage administrator (vmsa) tools.

Use the volume manager to make sure the following file systems and volumes have been created and are the appropriate sizes:

---

**Note** **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 should 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.)

---

## Reboot the Server

- 1 After the volume management software is successfully installed, reboot the system by entering:

**shutdown -i6 -g0 -y**

When the system finishes booting, all encapsulated disks should be available for use.

- 2 Restart X Windows or CDE, and log on as **root** user.

## Return to the Main Procedure

Now you can continue with the DB2 and Image Services installation. Return to the section, **“Create Logical Volumes for Image Services” on page 59** in Chapter 2.



# Appendix D – National Language Support

This appendix contains steps for setting 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 National Language Support (NLS) 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.

Refer to your Solaris documentation for in-depth instructions for setting up the server for National Language Support.

**Note** 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 Sun Server

Configure your Sun SPARC- or UltraSPARCstation for either an International/Localized environment or a Non-localized environment.

### International/Localized Environment

- 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 localizations will be installed in addition to the default locale.

**Note** Refer to the section discussing Locale in the System Configuration and Installation Guide (depending on the version of Solaris installed) for instructions on how to install alternate languages.

---

- 2 Make sure 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, etc. These packages consist of extensions for Solaris and incorporate numerous facilities for handling local linguistic and cultural conventions.

Make sure 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), etc.

If this directory does not exist, refer to the OpenWindows Localization Feature Package for the specific language, or have your Sun system administrator install the package.

- 3 Make sure that the following lines appear in the `~/.Xdefaults` and `~/.OWdefaults` files:

```
OpenWindows.Basic Locale  
OpenWindows.DisplayLang  
OpenWindows.InputLang  
OpenWindows.NumericFont  
OpenWindows.TimeFormat
```

If the entries do not exist, refer to the section discussing Locale in your Solaris documentation for instructions.

- 4 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.

- 5 You must set up the LANG variable in your shell environment files using your preferred editor. From your .HOME directory, edit the necessary files by completing one of the following:

**Important!**

---

Make sure 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 native 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 native language (locale) in which you want your server to operate.

## Non-localized Environment

To use 8-bit characters, the Solaris 9 OS software must run in a European locale. However, European locales require installation of localization feature packages.

- 1 If these localization packages are not available to you, use the following work-around:
  - In **cs**h shell, enter:

```
setenv LC_CTYPE iso-8859_1
```

- In **sh** shell, enter:

```
LC_CTYPE=iso_8559_1  
export LC_CTYPE
```

**Note** 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. DO NOT set the LANG environment variable to ISO\_8859\_1.

---

- 2 Set the terminal port to allow 8-bit processing for applications (like Command Tool or Shell Tool) by typing:

```
/usr/bin/stty cs8  
/usr/bin/stty -istrip
```

You can insert the above settings in your .login (for csh) or .profile (for sh) file.

- 3 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 (via DIP switch settings) for various European and Asian support. (It can also be configured to function as a Type 4 keyboard.) Refer to your Solaris documentation for detailed instructions for setting up the keyboard, or have your Sun system administrator set it up.



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