FX Series
AIX Version 4.1

Operating System Installation Guide

AFXINSA/IS1

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Introduction 1

Purpose

The *Operating System Installation Guide* contains information about installing and updating the AIX 4.1 operating system. The *Operating System Installation Guide* is intended for customers installing AIX 4.1 on stand-alone systems. A *stand-alone system* is a machine that can boot (start up) by itself. The system may or may not be on a network.

For information on installing standalone, diskless and dataless machines over a network, refer to the *AIX 4.1 Network Installation Management Guide and Reference.* Diskless and dataless machines cannot boot (start up) by themselves. They must use a remote server system to boot. Network installation is not available on FX Series systems.

1

Scope

The *Operating System Installation Guide* describes:

- how to install the AIX 4.1 Base Operating System (BOS)
- how to update the AIX 4.1 Base Operating System (BOS)
- how to configure your system
- how to install additional software

Chapter 3, "Determining Your Starting Point," indicates which portions of this guide you should use for different types of installations.

Prerequisites

This guide assumes that all of the required hardware is already installed on your system. This guide also assumes the you have a thorough understanding of the SMIT interface. The procedures in this guide identify prerequisite tasks or conditions that must be met before performing the procedures.

Overview of Contents

The *Operating System Installation Guide* is organized as follows in the table below.

This Chapter/Appendix...	Provides. . .
Chapter 2, “Determining Your Starting Point”	information to help you decide which chapters of this guide you need to use
Chapter 3, “Updating the BOS”	procedures for updating a system from an earlier release of standard AIX 4.1 to the current release
Chapter 4, “Installing the BOS from Your Installation Medium”	a description of the different types of installation procedures you can use depending on the state or release of your system You can accept default settings and begin the installation process immediately, or you can verify or change system settings before beginning the installation
Chapter 5, “Customizing Your Installation”	the tasks you need to perform after you have installed the BOS These tasks include: • setting the date and time • creating a user account for performing non-administrative • setting up your local and network environments • installing collections of software • backing up your system
Chapter 6, “Installing and Removing Optional Software”	the procedure for installing software products after you have completed the BOS installation
Appendix A, “Additional Software Installation Information”	information on the following topics: • automatically installed software • preinstalled software • software that should not be installed
Appendix B, “Optional Software Installation Concepts”	detailed information on software packaging and software installation functions

This Chapter/Appendix...	Provides. . .
Appendix C, “Related Information”	a list of other titles that provide more information about concepts and procedures covered in the *Operating System Installation Guide*

Getting Help for System Problems

If you encounter difficulties with AIX 4.1 on your system or on a supported board, contact your Value Added Reseller (VAR) or distributor first. If further assistance is needed, you can contact the Motorola Computer Group Sales office or Motorola Computer Group's customer support group at:

- U.S.A. 1-800-551-1016
- Canada 1-800-387-2416
- Maidenhead, U.K. 44-1628-39121
- Paris, France 33-1-467-43560
- Duesseldorf, Germany 49-211-65899-55

When you call, be prepared to provide the following information:

- the model of system or motherboard you are using with AIX 4.1
- your system or board ID or serial number
- serial numbers and part numbers for all modules in the system (FX Series systems only)
- history logs from each module's EEPROM (FX Series systems only)
- the name of your company, your name, and a telephone number
- a brief description of the problem, including the severity of its impact on your ongoing efforts

This information is forwarded to the appropriate technical engineering contact, who will return your call promptly.

Determining Your Starting Point 2

Overview

This chapter helps you determine how to proceed in completing installation tasks. This chapter suggests a minimal path through the *Operating System Installation Guide*. However, you may want to use additional procedures described in other chapters or booklets.

This chapter discusses these topics:

- "System Installation Times" on page 2-2
- "Space Requirements" on page 2-3
- "Updating the BOS" on page 2-4
- "Customizing a Preinstalled System" on page 2-5
- "Installing a New BOS from the CD-ROM" on page 2-6

System Installation Times

This section lists sample installation times for this release of AIX 4.1. The installation times are based on a `New and Complete Installation` from a CD-ROM. Installation times may vary slightly depending on the type of installation you are performing and the type of processor in your system. Sample times for an ASCII installation and a graphics installation on various systems are listed in Table 2-1:

Table 2-1. New and Complete Installation Times

System	Installation Time on Serial (ASCII) Console	Installation Time on Graphics Console
Commercial Systems	60 minutes	65 minutes
VME Systems	60 minutes	65 minutes
FX Series Systems	65 minutes	N/A

Space Requirements

Table 2-2 lists the minimum space requirement necessary to install the Base Operating System, Graphics, and the Personal Productivity (`Pers_Prod`) bundle:

Table 2-2. Minimum System Space Required for Installation

Package	Required Disk Space	Required Paging Space
Base Operating System	130MB	32MB
Graphics	55MB	37MB
Personal Productivity bundle	60MB	none

2

Updating the BOS

If your system is currently running AIX 4.1 Service Level AOS1.2 or a later release and you want to update the BOS to AIX 4.1.4r6, refer to Chapter 4, “Installing the BOS from Your Installation Medium.”

Customizing a Preinstalled System

If you received a system that was preinstalled at the factory, follow these steps:

1. Turn on the system.
2. When prompted to do so, identify your system console.
3. Refer to Chapter 5, “Customizing Your Installation.”

Installing a New BOS from the CD-ROM

If you are installing a new BOS on a machine, follow these steps:

1. Complete the procedures in Chapter 4, “Installing the BOS from Your Installation Medium.”
2. Continue with Chapter 5, “Customizing Your Installation.”

Updating the BOS 3

Overview

This chapter describes how to update a system currently running an earlier release of AIX 4.1 to the current release. This process does not require any manual reconfiguration of your system files.

Note This chapter includes example SMIT screens as they appear using an ASCII display. If your system is running AIXwindows, the SMIT screens you see may not exactly match the ones shown in this section. However, the options provided are identical in either interface.

If you are not familiar with the SMIT interface and want help using SMIT, see Chapter 6, “Installing and Removing Optional Software.”

Caution

If you update your system from an earlier release of AIX 4.1, you are not able to use SNA or X.25 networking LPPs until you update them. For more information, contact your sales representative.

3 BOS Update Procedure

This section provides the procedure for completing an update of the BOS.

Note Before you begin the procedure, stop all applications and have all users log off the system.

Use the following procedure to complete a BOS update. For information on customizing your update installation refer to "Customizing Future BOS Installations" on page 5-28.

1. Start SMIT with one of the following options:

   - If your system is running AIXwindows, but you want to use the ASCII SMIT interface, enter:

     ```
     smit -C update_all
     ```

   - Otherwise, at the system prompt, enter:

     ```
     smit update_all
     ```

   Result: The `Update Currently Installed Software to Latest Level` screen is displayed.

2. Display the list of the available input devices or directories. *input device* is the CD-ROM drive that you are using to update the BOS.

3. Select an input device and confirm your selection.

   Result: The device you selected is now displayed in the `INPUT device/directory for software` entry field.

The screen that is displayed next lists the update options:

```
Install Software Products From All Available Software

   Type or select a value for the entry fields.
   Press Enter AFTER making all desired changes.

                                                        [Entry Fields]
   INPUT device/directory for software                  [/dev/cd0]      +
   SOFTWARE to update                                   update_all      +
   PREVIEW only? (install operation will NOT occur)     no              +
   COMMIT software updates?                             yes             +
   SAVE replace files?                                  no              +
   ALTERNATE Save Directory                             []              +
   EXTEND file systems if space needed?                 yes             +
   VERIFY update and check file sizes?                  no              +
   DETAILED output?                                     no              +


F1 = Help       F2 = Refresh        F3 = Cancel         F4=List
F5=Undo         F6=Command          F7=Edit             F8 = Image
F9 = Shell      F10 = Exit          Enter = Do
```

4. Verify whether you want to keep or change the default update settings.

   Use the SMIT on-line help for each field to determine if you want to use the default setting.

5. Change any settings necessary.

6. If you wish to preview the results of the update before actually installing the software, change the setting of the PREVIEW only? (install operation will NOT occur) field to a yes value.

7. Confirm your selection when you are satisfied with all the settings on this screen.

   Result: The ARE YOU SURE? message is displayed to confirm that you want to continue with the update.

   If you set the preview function to yes, then the update does not actually occur. In this case, repeat this procedure with the preview function set to no when you want to update the BOS.

As the update progresses, status messages are written on the displayed screen. A log is kept of the installation activities. Refer to the “Reviewing Message Logs” section in Chapter 6 for more information on using these logs.

8. After the update is complete, issue the following command:

   ```
   bosboot -a -d /dev/ipldevice
   ```

9. When the command finishes, reboot your system by entering:

   ```
   shutdown -Fr
   ```

Installing the BOS from Your Installation Medium 4

Overview

This chapter describes the installation methods and procedures for installing the AIX 4.1 Base Operating System (BOS) from CD-ROM or tape.

The chapter includes the following sections:

- "Flowchart for BOS Installation" on page 4-2
- "Run-time BOS Installation Methods" on page 4-3
- "Determining the State of Your System" on page 4-7
- "Installing with Default System Settings" on page 4-11
- "Installing with Modified System Settings" on page 4-12
- "Completing the Run-time BOS Installation" on page 4-21

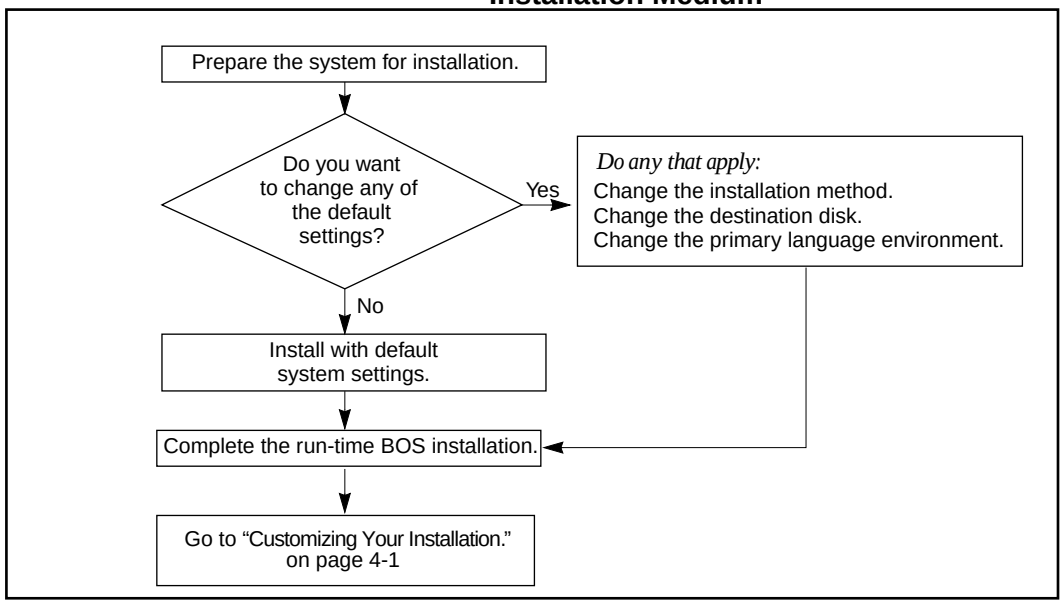
Note The procedures in this chapter contain illustrations of the on-line screens used during installation. These illustrations are provided as examples only. The screens you see may look different.

4

Flowchart for BOS Installation

Figure 4-1 illustrates the steps for installing the BOS from an installation medium. You can use one of two installation methods to install your BOS. These methods are discussed in the next section. The rest of this chapter describes the detailed tasks for each of the steps shown in the flowchart.

Figure 4-1. Flowchart for BOS Installation from Your Installation Medium



Run-time BOS Installation Methods

Follow the procedures in this chapter to install the run-time BOS. After completing these procedures, refer to Chapter 6, “Installing and Removing Optional Software,” for information on the tasks you need to complete after you install the BOS.

The default method of installation is based upon the state of your system. If the system has never had the operating system installed, the `New and Complete Overwrite Installation` method is the default method of installation.

If the operating system has previously been installed on your system, the `Preservation Installation` is the default method of installation.

New and Complete Overwrite Installation

This method of installation is appropriate in the following situations:

- You have a new machine. In this case, the hard disk or disks on which you are installing the BOS are empty. This is the only possible installation method for a new machine.
- You want to completely overwrite an existing version of the BOS installed on your system. Be sure to back up your system before doing a `New and Complete Overwrite` installation.
- You have an FX Series system.

Preservation Installation

This method of installation is appropriate in the following situations:

- You want to install onto a hard disk that contains an existing root volume group that you wish to completely overwrite. For example, this might occur if your root volume group has become corrupted.
- You want to preserve the `/home` file system.

The preservation installation method overwrites the `/usr`, `/tmp`, `/var`, and `/` (root) file systems by default. Any user data in these directories is lost. After completing a preservation installation, you need to complete all system configuration tasks.

The `/etc/preserve.list` file contains a list of system files to be copied and saved during a preservation installation.

The `preserve.list` file is placed on the system when the `App_Dev` bundle is installed. If you do not have a `preserve.list` file on your system, create one with any text editor and place it in the `/etc` directory.

By default, the `/etc/filesystems` file is listed in the `preserve.list` file. You can edit `preserve.list` to include the full path names of any additional configuration files that you want to save during a preservation installation.

Prior to doing a preservation installation with a customized `preserve.list` file, you must ensure that you have sufficient disk space in the `/tmp` file system. The files listed in `preserve.list` are stored in `/tmp` during the installation process.

Preparing for the Run-time BOS Installation

4

Overview

Follow the procedures in this section to begin the run-time BOS installation process.

Prerequisites

Before installing the Base Operating System, complete the following prerequisites:

- If you have a standard AIX 4.1 system, connect all hardware, including any external devices such as CD-ROM or tape drives. If you need instructions, refer to the hardware documentation that accompanied your system.
- Determine the terminal type of your system console.
- Locate your installation medium.
- Read the documentation that came with the installation medium.
- If other users have access to your system, make sure they are logged off before you begin the installation.

Setting ASCII Terminal Options

If you are using an ASCII terminal set the communications and keyboard options as shown below:

Table 4-1. ASCII Terminal Communications Options

Set This Option...	To This Value...
line speed (baud rate	9600
word length (bits per character)	8
parity	no (none)
number of stop bits	1
interface	RS-232C
line control	IPRTS

Table 4-2. ASCII Terminal Keyboard Options

Set This Option...	To This Value...
screen	normal
row and column	24x80
scroll	jump
auto LF (line feed)	off
line wrap	on
forcing insert	line (or both)
tab	field
operating mode	echo
turnaround character	CR
enter	return
return	new line
new line	CR
send	page
insert character	space

Refer to your hardware documentation for information about how to set these options.

Determining the State of Your System

To begin your BOS installation, follow the steps that pertain to the current state of your system:

- "The System Is Turned Off" on page 4-7
- "The System Is Up and Running AIX" on page 4-9

The System Is Turned Off

If your system is not turned off or running from the firmware, follow these steps:

1. Power on all attached external devices, such as terminals and monitors.
2. If you have an ASCII terminal, refer to Table 4-1 and Table 4-2 on page 4-6 for required communications and keyboard settings.
3. Power your system on.

4. Proceed according to the version of your firmware:

PPCBug or FX-Bug Firmware	After the self tests have completed, press the Esc key once when you see this message: `NVRAM Boot List about to Begin... Press <ESC> to Bypass, <SPC> to Continue`
PowerPC Open Firmware	a. After the automatic self tests have completed, press any key when you see this message: `Type any key to interrupt automatic startup` The system then goes to the PowerPC Open Firmware `Main Menu`. b. At the `Main Menu`, select the `Boot an Operating System` menu. The `Boot an Operating System` menu window appears. c. Select the `Perform auto-scan Boot Operation` menu option from the `Boot an Operating System` window.

5. Insert the installation medium into the appropriate device drive. Remove any other tapes, CD-ROMs, or floppy disks from all attached devices because they may interfere with the autoboot sequence.

6. Power cycle the system by turning it off and turning it on again.

   Result: The system begins to boot from the installation medium.

7. Go on to “Identifying System Console and Installation Language” on page 4-10.

The System Is Up and Running AIX

If your system is running AIX, follow these steps:

1. Log in as `root`.
2. Insert the installation medium into the appropriate device drive. Remove any other tapes, CD-ROMs, or floppy disks from all attached devices because they may interfere with the autoboot sequence.
3. Reboot the system by entering:

   ```
   shutdown -Fr
   ```

   Result: The system begins to boot from the installation medium.
4. Go on to “Identifying System Console and Installation Language” on page 4-10.

Identifying System Console and Installation Language

1. When prompted to do so, identify your system console.

   Result: If you have more than one directly attached display device (standard AIX 4.1 systems only), a screen displays on each device with a different response specified for each.

2. When the display prompts you for a language to use during installation, type `1` and confirm.

   Result: The `Welcome to the Base Operating System Installation and Maintenance` screen is displayed:

```
                Welcome to the Base Operating System
                Installation and Maintenance

Type the number of your choice and press Enter.

1 Start Install Now with Default Settings

2 Change/Show Installation Settings and Install

3 Start Maintenance Mode for System Recovery

88 Help?

99 Previous Menu

Choice:[1]
```

3. Continue the installation process with the procedures most suitable for your needs:

   - “Installing with Default System Settings” on page 4-11
   - “Installing with Modified System Settings” on page 4-12

Installing with Default System Settings

You must complete the procedures in "Determining the State of Your System" on page 4-7 before completing the procedures below. After you have prepared the system for installation, the system begins booting from the installation medium.

To install the BOS with default system settings, follow these steps:

1. To continue the installation using default settings, type 1 and confirm.

   If you want to verify the default settings, refer to the procedures in "Installing with Modified System Settings" on page 4-12 to view the settings.

2. When the `Installation Warning` screen is displayed, press Return to continue.

   Result: When installation begins, the `Installing Base Operating System` screen is displayed:

```
                Installing Base Operating System


Please Wait...

Approximate          Elapsed time
% tasks             (in minutes)
 complete

   20                   15
```

   As the installation progresses, the numbers in the `Approximate % complete` and `Elapsed time` fields increment to indicate the installation status. After the base run-time environment is installed, status information about other software that is being installed is displayed.

3. To complete the installation procedures, refer to "Completing the Run-time BOS Installation" on page 4-21.

Installing with Modified System Settings

You must complete the procedures in "Determining the State of Your System" on page 4-7 before completing the procedures below. After you have prepared the system for installation, the system begins booting from the installation medium. To install the BOS with modified system settings, follow these steps:

1. To continue the installation using modified settings, type `2` and confirm.

   Result: The `Installation and Settings` screen displays the default installation settings for your machine.

```
                              Installation and Settings

   Either type 0 and press Enter to install with current settings, or type
   the number of the setting you want to change and press Enter.

    1  System Settings
         Method of Installation.................Preservation Install
         Disk Where You Want to Install........hdisk0

    2  Primary Language Environment Settings (AFTER Install):
         Cultural Convention...................English (United States)
         Language..............................English (United States)
         Keyboard..............................English (United States)

    3  Install Trusted Computing Base..........NO
>>> 0  Install with the settings listed above.
                           +-------------------------------------------------
    88 Help?               | Warning: Base Operating System Installation will
    99 Previous Menu       | destroy or impair recovery of SOME data on the
                           | destination disk hdisk0.
>>> Choice [0]:            |
```

2. Determine what settings you want to change:

   - If you do not want to change a setting, continue the installation by typing `0` and pressing Return.

     To complete the installation procedures, refer to "Completing the Run-time BOS Installation" on page 4-21.

   - If you want to change the default installation method or disk, go to "Changing the Default Installation Method or Disk" on page 4-14.

- If you want to change the default language environment, go to “Changing the Default Language Environment” on page 4-18.

Note English (United States) is the recommended value for the `Primary Language Environment Settings`. However, under some circumstances, other values may be listed. You should ensure English (United States) is the `Primary Language` value on the `Installation and Settings` screen.

Changing the Default Installation Method or Disk

To modify the default installation method or disk for installation, follow these steps:

1. On the Installation and Settings menu, enter 1 to select the System Settings option.

   Result: The Change Method of Installation screen is displayed:

```
                              Change Method of Installation

   Type the number of the installation method and press Enter.

>>>   1 New and Complete Overwrite
           Overwrites EVERYTHING on the disk selected for installation. Warning:
           Only use this method if the disk is totally empty or if there is nothing on
           the disk you want to preserve.

      2 Preservation Install
           Preserves SOME of the existing data on the disk selected for installation.
           Warning: This method overwrites the usr (/usr), variable (/var), temporary
           (/tmp), and root (/) file systems. Other product (applications) files and
           configuration data will be destroyed.

      88 Help?
      99 Previous Menu

>>>   Choice [3]:
```

2. Enter the number that corresponds to the type of installation you want to perform.

   Result: The Change Disk(s) Where You Want to Install screen is displayed. (The example below shows the standard AIX 4.1 screen; the FX Series system screen is similar).

   For information on the types of installations, refer to "New and Complete Overwrite Installation" on page 4-3 and "Preservation Installation" on page 4-4.

This screen allows you to change the hard disk where the BOS is installed. If you have selected the `Preservation` method of installation, this screen displays the disks available in the root volume group. The >>> (three greater-than signs) mark each selected disk.

```
                    Change Disk(s) Where You Want to Install

   Type one or more numbers for the disk(s) to be used for installation and press
   Enter. To cancel a choice, type the corresponding number and press Enter. At
   least one bootable disk must be selected. The current choice is indicated by >>>.

        Name       Location Code   Size (MB)   VG Status          Bootable
>>>  1  hdisk0     00-01-0S-0,0    540 MB      rootvg             yes
     2  hdisk1     00-01-00-1,0    1.2 GB      not in VG          yes

>>>  0 Continue with choices indicated above

 66  Disks not known to Base Operating System Installation

 88  Help?
 99  Previous Menu

>>> Choice [0]:
```

The location codes of the hard disks are displayed in the `Location Code` column. The format for the location code of a direct-attached disk depends on the type of your system:

- If you have a standard AIX 4.1 system, the format for the location code of a direct-attached disk on a system is:

  AA-BB-CC-X,E

- If you have an FX Series system the location code of a direct-attached disk on a system is:

  AA(A)-BB(B)-X,E or
  AA(A)-BB(B)-00-X,E

where *X* is the SCSI ID and *E* is the SCSI LUN (Logical Unit Number).

Note Keep a record of the location code for the destination disk(s). In the future, you can use this location code to identify which disk(s) contain(s) the root volume group in order to do system maintenance.

3. If it is not already selected, type the number of the disk you want to select, and press Return. To deselect a disk, type its number again and press Return. You can select more than one disk for installation.

   Note Preservation Installation requires using the default disk configuration specified.

   If you have a standard AIX 4.1 system, you can also specify a supplemental disk by entering `66` for the `Disks not known to Base Operating System Installation` option. This option opens a new menu that prompts for a device support diskette for the supplemental disk. The BOS installation configures the system for the disk and then returns to the `Change Disk(s) Where You Want to Install` screen.

4. If you want to mirror the root volume group, the procedure depends on the type of system you have.

   - If you do not want to mirror the root volume group, go to step 6.
   - If you have a standard AIX 4.1 system, refer to *AIX Version 4.1 System Management Guide: Operating System and Devices* to mirror the root volume group and then complete your system installation.
   - If you have an FX Series system and want to mirror the root volume group, go on to step 5.

5. If you have an FX Series system and wish to mirror the root volume group:

   a. Refer to the location codes (with the format *AA(A)-BB(B)-X,E* or *AA(A)-BB(B)-00-X,E*) displayed on the `Change Disk(s) Where You Want to Install` screen.

- If *BB(B)* is in the range from `f1` to `f8`, then the disk is in Domain 0.
- If *BB(B)* is in the range from `f9` to `f16`, then the disk is in Domain 1.

b. Select one disk in each system domain:

- If your system was mirrored previously, your system attempts to mirror disks by default.
- If you do not select disks in opposite domains, the root volume group is not mirrored.

For more information on mirroring the root volume group on an FX Series system, refer to *Managing System Storage*.

6. Type `0` and press Return when you finish selecting disks.

   Result: After you have selected one or more installation disks, the `Installation and Settings` screen is displayed with the selected disks or the newly configured disk listed under `System Settings`.

7. Do you want to continue with installation or change the default language environment?

   - If you want to continue, type `0` and press Return.

     To complete the installation procedures, refer to "Completing the Run-time BOS Installation" on page 4-21.

   - If you want to modify the default language environment, refer to "Changing the Default Language Environment" on page 4-18.

Changing the Default Language Environment

The default locale for your system is determined by the values specified as Primary Language Environment Settings. It is recommended that you leave the default language set to English to ensure proper use of message catalogs.

To modify the default language environment, follow these steps:

1. On the Installation and Settings menu, enter 2 to select the Primary Language Environment Settings option.

   Result: The Set Primary Language Environment screen is displayed:

```
                        Set Primary Language Environment

     Type the number for the Cultural Convention (such as date, time, and
     money), Language, and Keyboard for this system and press Enter, or type
     25 and press Enter to create your own combination.

     Cultural Convention        Language               Keyboard

     1 C (POSIX)               C (POSIX)               C (POSIX)
     2 Arabic (ISO)            English (United States)  Arabic (ISO)
     3 Arabic (PC)             English (United States)  Arabic (PC)
     4 Bulgarian               English (United States)  Bulgarian
     5 Croatian                English (United States)  Croatian
     6 Czech                   English (United States)  Czech
     7 Danish                  English (United States)  Danish
     8 Dutch (Belgium)         Dutch (Belgium)          Dutch (Belgium)
     9 Dutch                   English (United States)  Dutch
>>>  10 MORE CHOICES




   88  Help?
   99  Previous Menu

>>> Choice [10]:
```

The Set Primary Language Environment screen allows you to change the language environment used to display text and messages after the BOS installation. The Cultural Convention field determines the way numeric, monetary, and time characters are displayed.

The Language field determines the language used to display text and system messages. The environments that are available depend on the type of keyboard you are using.

Notes Changes to the primary language environment do not take effect until after the BOS is installed and your system is rebooted.

For information about changing language environments and code sets after installation, refer to the sections on locales in *AIX Version 4.1 System Management Guide: Operating System and Devices* for standard AIX 4.1 systems or *Managing System Storage* for FX Series Systems. These sections provide information on identifying language conventions and on using the Manage Language Environment menu option of the System Management Interface Tool (SMIT) to change your language environment and code set after installation.

2. Select an option on the Set Primary Language Environment screen:
   - If you select a predefined option, the Installation and Settings screen is displayed. Skip to step 6.
   - If you select the option to define your own combination of cultural convention, language, and keyboard, then the Set Primary Cultural Convention screen is displayed.
3. Enter the number indicating the cultural conventions required on the Set Primary Cultural Convention screen.

   Result: The Set Primary Language screen is displayed.
4. Enter the number indicating the primary language required.

   Result: The Set Keyboard screen is displayed.

5. Enter the number indicating the keyboard attached to the system.

   Result: The `Installation and Settings` menu is displayed again, reflecting your changes.

6. To continue with the installation process, type `0` and press Return.

7. To complete the installation procedures, refer to "Completing the Run-time BOS Installation" on page 4-21.

Completing the Run-time BOS Installation

When the installation process is complete, the system reboots and the Installation Assistant starts.

Note On most AIX systems, if the system takes a crash dump, the dump points to the paging logical volume. On FX Series systems, the BOS installation creates a separate dump logical volume (`/dev/sysdump0` or `/dev/sysdump1`, depending on the I/O domain containing the rootvg).

Refer to Chapter 6, “Installing and Removing Optional Software,” for information on the remaining required installation tasks.

Customizing Your Installation 5

Overview

This chapter provides the tasks you need to perform after installing the Base Operating System (BOS). After installing the BOS, the operating systems run with default settings:

- one user (root)
- the date and time set for where the system was manufactured
- other very general settings

You need to change these settings using the *Installation Assistant*. You must also provide system and network information if you want to communicate with other systems. Use the worksheets provided in this chapter to do this. Finally, you need to perform some additional customization tasks, such as installing InfoExplorer databases and configuring printers.

This chapter includes the following sections:

- "Gathering the Required Information" on page 5-3
- "Determining the Required Bundles" on page 5-6
- "Starting Installation Assistant" on page 5-8
- "Completing Customization Using the Installation Assistant" on page 5-9
- "Installing InfoExplorer Databases" on page 5-12
- "Installing FX Series Manual Pages" on page 5-13
- "Configuring the Ethernet Adapter Medium" on page 5-14
- "Configuration Tasks for Series E Systems" on page 5-19
- "Configuring ISA Devices" on page 5-24
- "Configuring an Additional Graphics Adapter for RISC PC" on page 5-25
- "Customizing Future BOS Installations" on page 5-28

Gathering the Required Information

Use the worksheets on the following pages to gather the information needed for configuring network communications.

TCP/IP Minimum Configuration and Startup Worksheet

System Name:_____
Network Administrator:_____
Date:_____

YOUR SYSTEM:

Network Interface:_____
Standard Ethernet, IEEE 802.3 Ethernet, or Token Ring

Host Name:_____
Name of your system

Internet Address:_____
Address on the Internet
Do not write in leading zeroes.
For example, do not write `002.020.120.010`; instead, write `2.20.120.10`.

Network Mask:_____
Network mask, if your network uses mask addresses

Name Server Internet Address:_____
Required if your network uses a name server

Name Server Domain Name:_____
Required if your network uses a name server

Default Gateway Internet Address:_____
Required if your network uses a gateway

Ring Speed: (4 or 16)_____
Required for Token-Ring

Updating the Host List Worksheet

Network Administrator:_____

Date:_____

Complete the following information in the host list worksheet:

- For each system you want to communicate with in the network, write the system's host name and Internet address. Each host name and Internet address must be unique. Do not enter the leading zeroes in an Internet address. For example, for the Internet address 002.020.120.010, write `2.20.120.10`.
- An *alias* is an optional synonym for the host name.
- Comments are optional notes for your reference.

Host Name	Internet Address	Aliases	Comments

Mounting Remote File Systems Worksheet

System Name:_____

System
Administrator:_____

Date:_____

YOUR SYSTEM:

Full Path Name of Mount Point:_____
Mount point for server file system

Full Path Name of Remote Directory:_____
Path on the server

Host Name where Remote Directory Resides:_____
Host name of server

Do you want to use the secure Mount option: yes_____no_____

Mount: Now ___ Add to `/etc/filesystems`___ Both ___
Both makes the file system available each time the system starts.

`/etc/filesystems` Mount Directory on System Restart:
yes__ no __
Yes makes the file system available each time the system starts.

Mode for this NFS File System: read-only____ read-write___

Mount is attempted in the: foreground____ background____

Mount system: hard____ soft____

Allow execution of SUID and sgid programs in this file system:
yes_____no_____

Allow access via this mount: yes_____ no_____

Server supports long device numbers: yes_____no_____

Determining the Required Bundles

How you plan to use your system determines which software bundles you need to install.

- If you are installing a server system, refer to the “Server Bundles” on page 5-6 (standard AIX 4.1 only)
- If you are installing a client system, refer to the “Client Bundles” on page 5-7 (both standard AIX 4.1 and FX Series systems)

Note If your system was preinstalled in the factory, you may not have to install any additional bundles. For example, server systems have already been installed with the Server bundle and client systems have already been installed with the Client bundle.

Use the `lslpp -L` command to determine what software filesets were preinstalled on your system.

Server Bundles

Use the table below to determine all of the software bundles you need to install on your system.

Note Server bundles are available for standard AIX 4.1 systems only; they’re not available for the FX Series.

If your system...	Install this bundle...
was installed from an ASCII terminal and you want to use a graphics display in the X-Window environment	`Graphics_Startup`
is used as a multi-user server	Server
should provide access to the COSE Common Desktop Environment (implemented as AIXwindows Desktop in AIX 4.1)	Personal Productivity (`Pers_Prod`)
is used for software development activities	Application Development (`App_Dev`)

To install the required bundles, use the `Install Software Applications` option in the Installation Assistant.

Note None of the bundles listed above includes the entire set of InfoExplorer databases or the manual pages. Refer to "Installing InfoExplorer Databases" on page 5-12 for more information.

Client Bundles

Use the table below to determine all of the software bundles you need to install on your system.

If your system...	Install this bundle...
was installed from an ASCII terminal and you want to use a graphics display in the X-Window environment	`Graphics_Startup`
should provide access to the COSE Common Desktop Environment (implemented as AIXwindows desktop in AIX 4.1)	Personal Productivity (`Pers_Prod`)
is used for software development activities	Application Development (`App_Dev`)

To install the required bundles, use the `Install Software Applications` option in the Installation Assistant.

Note None of the bundles listed above includes the entire set of InfoExplorer databases or the manual pages. Refer to the "Installing InfoExplorer Databases" on page 5-12 for more information.

Starting Installation Assistant

The Installation Assistant enables you to customize your system.

1. Start the Installation Assistant by following one of the options listed below:

   - If you have newly installed the BOS, they system reboots when installation is complete and starts the Installation Assistant.
   - If your system was preinstalled at the factory, the system starts the Installation Assistant when you boot for the first time.
   - If you need to access the Installation Assistant after exiting and logging in to AIX, enter the following command at the AIX system prompt:

     `install_assist`

2. If your terminal type is not set, the first menu displayed by the ASCII Installation Assistant requires you to enter your terminal type (`tty`) at this time.

   Results:

   - If you enter an invalid terminal type, this menu redisplays until a valid type is entered.
   - If you enter a valid terminal type that does not match your terminal, the next screen displayed may be unreadable.

     In this case, press the break key sequence to return to the `Set Terminal Type` screen. For most terminal types, the break key sequence is Ctrl-`C`.
   - The Installation Assistant is displayed.

3. Go on to “Completing Customization Using the Installation Assistant” on page 5-9 to finish the customization of your system using the Installation Assistant.

Completing Customization Using the Installation Assistant

The Installation Assistant lists the tasks that apply to your type of installation.

Note Instructions in this chapter assume that you are using an ASCII interface.

Complete the customization tasks in the order the Installation Assistant lists them:

1. Set the system date and time for your time zone.
2. Set a root user account password to restrict access to system resources.
3. Confirm or change the device you use to install additional software.
4. If you have an FX Series system, configure your Fault Tolerant Ethernet. If you have a standard AIX 4.1 system, continue on to step 5 now.

   On an FX Series system, you must manually configure logical ethernet devices. You cannot configure TCP/IP until the logical ethernet device(s) is ready. Refer to "Configuring the Ethernet Adapter Medium" on page 5-14 for more information.
5. Set your system to communicate with other systems to access their resources. Use the worksheets in this chapter to gather the necessary information.

   If you need to configure your machine as an NFS server, refer to *AIX Version 4.1 System Management Guide: Communications and Networks*.
6. Check the system storage and paging space needed to install and use additional software applications.

Note If you do not check this, installation of additional software may fail due to low paging space.

7. Change the primary language environment or add a secondary language environment.
8. Create user accounts.
9. Configure your printer and add print queues for local printers and remote print servers.
10. Import any existing volume groups.
11. Install software applications and/or add license keys for software.

    Note To ensure successful completion of software installation, you must select and execute the `Manage System Storage and Paging Space (rootvg)` menu option before installing any additional software.

    You may want to add additional software bundles. Refer to "Determining the Required Bundles" on page 5-6 for information on which bundles you should install.

    For information on installing other applications, refer to Chapter 6, "Installing and Removing Optional Software."

    If you need to configure the system to serve license passwords, refer to the *iFOR/LS System Management Guide*.

12. Back up the system.

    For information on making backups without using the Installation Assistant, refer to the *Making and Using Backups* booklet.

13. Exit the Installation Assistant.

    Note If you do not exit the Installation Assistant using the `Tasks Completed–Exit to AIX Login` option, your system does not create adequate swap space.

If your machine was preinstalled at the factory, a message displays asking you to wait; it takes a few minutes before the login prompt displays.

14. Log in to the system.

Once you have exited the Installation Assistant, all customization tasks except `Exit` display the next time you use Installation Assistant.

Installing InfoExplorer Databases

After you install the bundles you need, you may want to install the InfoExplorer databases.

Note Systems preinstalled in the factory have the InfoExplorer databases installed.

Use the procedures in this section to install the databases.

1. Enter `smit install_latest` at the system prompt to access the `Install Software Products at Latest Level` screen.
2. Enter the input device name (usually `/dev/cd0`) in the `INPUT device / directory for software` field.

   The `Install Software Products at Latest Level` screen is displayed.
3. In the `SOFTWARE to install` column, enter the following:

   `bos.info.en_US`
4. Confirm the other settings on this menu.
5. When the system displays a message asking you if you are sure you want to begin the installation, press Return again to begin the installation.

   Note In order to use the graphical version of InfoExplorer, you must install the `Graphics_Startup` and `Pers_Prod` bundles.

Installing FX Series Manual Pages

The FX Series operating system software includes a number of manual pages that are specific to FX Series systems. However, these manual pages are not installed as part of the operating system base installation. You must install them separately.

After you complete the base operating system installation, add the additional manual pages by installing these filesets:

- `bos.man.en_US.xrft.base.lvm`
- `devices.man.en_US.sys.ft.rte`
- `devices.man.en_US.sys.iobus.rte`
- `devices.man.en_US.xrft.base.com`
- `devices.man.en_US.xrft.cms.presaddr.adt`
- `devices.man.en_US.xrft.cms.rte`
- `devices.man.en_US.mbus.rte`

Refer to Chapter 6, “Installing and Removing Optional Software” for information on installing these filesets.

After you have installed these filesets, use the `man` command to access the FX Series manual pages. You must use the `man` command to access these manual pages. They are not available in InfoExplorer.

Configuring the Ethernet Adapter Medium

This section tells you how to configure the Ethernet adapter medium for standard AIX 4.1 systems and FX Series systems.

Standard AIX 4.1 Systems

The default `Interface Media Type` for networking adapters is `Auto Detection`. When the system package is installed, this setting enables the system to automatically detect the type of medium in use.

Note It is possible for autosensing to take up to 3.5 seconds. This may occur if the error rate is momentarily very high or if the cable is unplugged. In these instances the autosense occurs at the interrupt level of the Ethernet and interrupts are inhibited for the duration of the autosense.

While these occurrences should be infrequent and tolerable in most cases, if your applications require real-time or near real-time response, do not leave `Auto Detect` as the configuration. Instead, manually configure the adapter interface for the correct network type.

Note Znyx ZX312 Adapters (10MB/s, 3 media) have a switch that sets either AUI or BNC as the interface medium type. Auto detection can only sense the one in use.

Switching Cables

If you remove the cables from one type of interface medium and attach them to another type, your system does not recognize the correct medium type.

You need to trigger a media reconfiguration in order for your system to recognize the correct medium type. (This reconfiguration should take less than 30 seconds to complete.) Pinging another machine in the network is one method of triggering this media reconfiguration.

Using Specialized Media Types

If both ends of the link (the hub and the local adapter) are Nway capable, then full-duplex configuration is automatic. However, if either end of your link is not Nway capable, you must manually configure full-duplex operation. In addition, if your system uses a 10BaseT hub that does not support link testing or uses a full-duplex 10BaseT or 100BaseTX hub, it does not automatically configure the correct media type. Finally some AUI implementations are difficult to autosense. It may be necessary for you to manually configure AUI ports. You need to manually configure these media types as described in the procedure below:

1. Enter `smit eadap` at the system prompt to access the SMIT `Adapter` screen.
2. Select `Change/Show Characteristics of an Ethernet Adapter` from the `Adapter` screen.

   Result: An `Ethernet Adapter` screen displays.
3. Select the appropriate Ethernet adapter from the screen.

   Result: The `Change/Show Characteristics of an Ethernet Adapter` screen displays.
4. Go to `Interface media type` and select the appropriate media type (`10BaseT Link Test Disabled`, `10BaseT Full Duplex`, or `100BaseTX Full Duplex`).
5. Go to `Apply change to DATABASE only` and change the selection to `yes`.
6. Confirm your changes.
7. Reboot the system to implement the changes.

Determining the Ethernet Packet Transmission/Reception Port

The port used for packet transmission / reception depends on which Ethernet media types a board supports and which of the ports have cables attached. Refer to Table 5-1 to determine which port is used for packet transmission / reception on various board configurations.

Table 5-1. Default Data Ports on Various Board Configurations

If a board has these ports...	And cables are attached to these ports...	The board defaults to transmit/receive packets on this port...
AUI, BNC, Twisted Pair	none	Twisted Pair
AUI, BNC, Twisted Pair	all	Twisted Pair
AUI, BNC, Twisted Pair	AUI, BNC	BNC
10BaseT, 100BaseTX	none	100BaseTX
10BaseT, 100BaseTX	both	100BaseTX

FX Series Systems

After system installation, only physical ethernet devices are made `AVAILABLE`. You have to manually create logical Ethernet devices and assign their member physical Ethernet devices. Autopair is not available. You have full control of the ethernet configuration.

The logical ethernet device (for example, `ent0`) has four member devices. The logical ethernet device is considered to be `online_via_0` only if both its `member0` device (`pent0`) and its `member0_pm` device (`LANPM-0`) in the same slot are both online.

1. If you are configuring the ethernet device from:
   - SMIT, at the command line enter: `smit tcpip`.
   - Installation Assistant, go to step 2.
2. Select `Fault Tolerant Ethernet Configuration`.

3. If you are using:
   - SMIT, select `Logical Ethernet Device`.
   - Installation Assistant, go to step 4.
4. Select `Create a New Logical Ethernet Device`.
5. From the `Logical Ethernet Device` menu, enter the values for `Member 0`, `Member 1`, and `Cable Type`.

   View the list of available devices. Execute the command when ready.

After the logical Ethernet device(s) is configured, use the TCP/IP SMIT menu to configure TCP/IP. A fast link to the TCP/IP SMIT menu is also provided in the Ethernet SMIT menu. Refer to the TCP/IP worksheet.

Setting Ethernet Cable Type

Ethernet cable type can be set and changed via SMIT at any time.

You can use any of the options below to change your Ethernet cable type:

- Enter `smit tcpip` to invoke the SMIT panel of the TCP/IP network interface.

  The cable types are `tp`, `dix`, and `bnc`, where `tp` = `UTP`, `dix` = `AUI`, and `bnc` = `BNC`.

  Setting cable type via the above `tcpip` panel carries a global meaning. For a paired ethernet configuration, it sets the cable type of both of its two member physical devices. In particular, it sets attribute `bnc_select` of this logical device, and attribute `interface_type` of its two member devices all to the same cable type.

- Enter `smit ethernet` to invoke the ethernet SMIT panel.

  This panel allows you to change the cable type of a single physical ethernet device. If there is a conflict, the cable type of a physical ethernet device takes precedence over that of its logical ethernet device.

Note The `Adapter` field is not a valid entry on FX Series systems. Although you can invoke its sub-menu, you cannot change the ethernet configuration.

Determining Ethernet Transmission Packets

The FX Series system has only one port layout: AUI, BNC, and 10BaseT (Twisted Pair). All three ports are always present on MFIO Personality Module and a LAN Personality Module.

Only one cable is allowed on an FX Series ethernet controller. You must set the ODM database port to match the physical cable attached to the controller. The default port setting in the ODM database is 10BaseT twisted pair.

Configuration Tasks for Series E Systems

Series E systems users need to complete these configuration tasks:

- "Configuring sa2 and sa3 Serial I/O Ports" on page 5-19
- "Configuring ttys" on page 5-20
- "Configuring Serial Printers" on page 5-21

Configuring sa2 and sa3 Serial I/O Ports

The third and fourth serial I/O ports of the Series E can support a variety of communications protocols. Support for the asynchronous protocol is standard. Support for other protocols can be purchased separately.

When configuring serial I/O ports `sa2` and `sa3`, you should first set the modes for the ports, and then configure them. The default mode for the two serial I/O ports is `asynchronous`. If you connect asynchronous devices such as ttys or printers, you must configure the tty ports (refer to "Configuring ttys" on page 5-20) or printers (refer to "Configuring Serial Printers" on page 5-21).

If you want to use another protocol, or if you have changed to another protocol and wish to change back to `asynchronous`, you need to set the modes of the ports by following these steps:

1. Enter `smit` at the system prompt to access the `System Management` screen.
2. Select `Devices` on the `System Management` screen.

   Result: The `Devices` screen is displayed.
3. From the `Devices` screen, select the `SCC Serial Adapters` option.
4. From the `SCC Serial Adapters` screen, select the `Change/Show Attributes of an SCC Serial Port` option.

5. Select sa2 or sa3 from the Logical Name screen.

   Result: The Change/Show SCC Port Attributes is displayed.

6. Confirm that the Protocol Mode field is set to async, then set the port mode.

Configuring ttys

Two types of ttys are supported on the built-in serial I/O controller in the Series E. To configure a tty for the first time on the built-in serial ports, perform these steps:

1. Type smit at the system prompt to access the System Management screen.
2. Select Devices on the System Management screen.

   Result: The Devices screen is displayed.

3. From the Devices screen, select the TTY option.
4. From the TTY screen, select the Add a TTY option.

   Result: A screen is displayed with a list of tty types.

5. On the TTY Type screen, select the entry tty rs232 Asynchronous Terminal.
6. From the Parent Adapter screen, select the parent adapter of the tty you want to configure.

   The parent adapter you choose should correspond to the name of the port you plugged the device into on the back of your system. Table 5-2 provides the list of adapters and their corresponding ports.

Table 5-2. Parent Adapters and Their Ports

Parent Adapter	Name of Corresponding Port
sa0	sa0/com1
sa1	sa1/com2
async0	sa2/com3
async1	sa3/com4

7. From the Add a TTY screen, indicate the port number to which you want to connect a terminal, as follows:

   a. When SMIT prompts you to choose the port number to which the terminal is connected, display the available port numbers.

      Result: Only one port number is displayed.

   b. Confirm your choice.

8. Go to the Enable LOGIN option and select either disable to enable.

9. Change any other configuration values you wish.

10. Configure the tty.

Configuring Serial Printers

Two types of serial printers are supported on the built-in serial I/O controller in the Series E. To configure a printer for the first time on the built-in serial ports, perform the following steps:

1. Enter smit pdp at the system prompt to access the SMIT Printer/Plotter Devices screen.

2. Select Add a Printer/Plotter on the Printer/Plotter Devices screen.

   Result: A Single Select List window is displayed, listing printer/plotter interfaces.

3. Select the Other Serial Printer option.

   Result: Another Single Select List window is displayed, listing printer/plotter interfaces.

4. Select the appropriate printer type. For example, rs232 is a standard RS232 printer plugged into ports sa0 and sa1. rs232.scc is a standard printer plugged into ports sa2 and sa3.

Note The difference between `rs232` and `rss232.scc` is in the serial I/O chip that is controlling the port. There is no difference in the types of printers that can be connected.

After you indicate the desired printer type, another `Single Select List` window is displayed, listing parent adapters.

5. Select the parent adapter of the printer you want to configure. The parent adapter you choose should correspond to the name of the port you plugged the device into on the back of your system.
6. Indicate the port number to which you want to connect the printer.
   - If the printer is plugged into `sa0` or `sa1`, SMIT determines the port number for you.
   - If you choose to connect to the printer to `sa2` or `sa3`, SMIT prompts you to choose the port number of the printer it is connected to. Examine the list of options. Choose the port number (`com3` or `com4`) that corresponds to the port number of the printer to which it is connected.
7. Change any other configuration values you want.
8. Choose the printer.

Depending on the type of printer you are configuring, you may not be able to set all of the printer attributes in the `xprintm` application.

Use SMIT to change the remaining attributes. Follow these steps:

1. Enter `smit chpq` at the system prompt to access the SMIT `Print Queue to Change/Show` window.
2. Enter the name of the print queue whose attributes you wish to change/set, and then select this print queue.

   The type of menu screen displayed depends on the type of printer you selected.

3. Use the menu displayed to select and modify the printer attributes you wish to set/change.
4. Apply the changes.
5. Reboot the system to implement the changes.

Configuring ISA Devices

If your system has ISA adapter cards, you must install the device software required for your system to recognize the cards. Use the procedures in this section for installing the device software.

1. Enter `smit devinst_isa` at the system prompt.

   Result: The `Install Additional Device Software` screen is displayed.

2. Enter the name of the device that contains the ISA adapter software.

   Result: A `Software to install` field is displayed.

3. Enter `devices.isa` in the `Software to install` field.

   Result: The `Command Status` screen is displayed after the software is installed.

4. If prompted, reboot the system.

Configuring an Additional Graphics Adapter for RISC PC

The RISC PC system provides a Cirrus graphics adapter on the CPU board. Optionally, you can add other graphic adapters to the system.

This section provides the procedures for configuring your system to run with an additional graphics adapter.

Prerequisite Information

The procedures in this section assume that you have installed a new graphics adapter card in your system.

If your system only has one monitor, leave the monitor plugged into the built-in Cirrus adapter after installing the new graphics adapter.

Note If the new graphics adapter is a Diamond ViperPro card with no monitor plugged into it, you will not see output from the firmware. However, the system should still boot correctly.

Installing the Driver Software

After you have installed the new graphics adapter, follow these steps to install the required device driver software:

1. Power on and boot the system.
2. Place the Base Operating System CD-ROM in the system drive.
3. Enter `smit cfgmgr` at the system prompt to access the `Install/Configure Devices Added After IPL` screen.
4. Enter the input device name (usually `/dev/cd0`) in the `INPUT device / directory for software` field.

5. Install the device driver software from the Base Operating System CD-ROM.
6. Exit SMIT.
7. If you want to continue using the Cirrus adapter in addition to the new adapter, complete the procedure in "Customizing Future BOS Installations" on page 5-28. Otherwise, continue with the procedures in "Reconfiguring the Desktop Environment."

Reconfiguring the Desktop Environment

Follow these steps to configure your system to use the new graphics adapter card for the default display:

1. Type the `lsdisp` command at the system prompt to determine the name of the new display (`gga0`, for example).
2. If you are using the desktop environment, then edit the `/usr/dt/config/Xservers` file. Change the line:

   ```
   :0  Local local@console /usr/lpp/X11/defaults/xserverrc\ -T -force :0
   ```

   to the following:

   ```
   :0  Local local@console /usr/lpp/X11/defaults/xserverrc\ -P11 newdisplayname -T -force :0
   ```

   where *newdisplayname* is the name of the new display, as determined above.

Rebooting the System

Follow these steps to complete the installation and reconfiguration process:

1. Shut down the system using the following command:

   ```
   shutdown -F
   ```

   Result: The `Halt completed...` message is displayed when the shutdown process completes.

2. If the system only has one monitor, unplug it from the Cirrus adapter and plug it into the new adapter card now.
3. Reboot the system.
4. As the system boots, you may be prompted to define the system console.

Customizing Future BOS Installations

When you update your system, you can chose to customize the BOS installation. You can:

- change many aspects of the default BOS install program
- customize the BOS installation to bypass the Installation Assistant and start your own configuration script
- replicate one set of installation settings on other machines

Changing the Default BOS Install Program

You can change many aspects of the default BOS install program by editing the `bosinst.data` file.

For example, by specifying no prompts, you can customize the program to install the BOS without menus.

For information on the `bosinst.data` file, refer to “The bosinst.data File” on page 5-30.

Bypassing the Installation Assistant

You can customize the BOS installation to bypass the Installation Assistant and start your own configuration script.

Replicating Installation Settings on Other Machines

You can use the `bosinst.data` file to replicate one set of installation settings on other machines.

For example, system administrators can create a `bosinst.data` file with settings that can be used to install all the machines they support that have the same configuration.

Note Another installation file, `image.data`, can also be modified and used during the BOS installation. See "The image.data File" on page 5-29 for more information.

The image.data File

The `image.data` file contains information describing the image installed during the BOS installation process. This information includes the sizes, names, maps, and mount points of logical volumes and file systems in the root volume group.

The installation program takes input from the `image.data` file regarding defaults for the machine being installed. See *AIX Version 4.1 Files Reference* for a description of the `image.data` file. The procedure for using the `bosinst.data` file to customize the BOS installation can also be used for the `image.data` file. The modified files can be used together to override the BOS installation defaults.

For information on the `bosinst.data` file, refer to "The bosinst.data File" on page 5-30.

The bosinst.data File

The `bosinst.data` file directs the actions of the BOS installation program. The file resides in the `/var/adm/ras` directory after the BOS has been installed.

The `bosinst.data` file contains stanzas with variables set to default values. Each variable is on a new line, in the form *Variable=Value*.

A blank line separates each stanza. The information in the stanzas informs the installation program about such things as the method of installation, type of installation, the disks in the machine, and the language used. By editing the file with an ASCII text editor, you can substitute new values for the default variables.

For more information, refer to the *Making and Using Backups* booklet.

Installing and Removing Optional Software 6

Overview

This chapter describes how to install optional software onto stand-alone systems using the System Management Interface Tool (SMIT) or one of two Visual System Management (VSM) applications.

This chapter includes:

- "Introduction to Installing Optional Software" on page 6-2
- "Prerequisites for Installing Optional Software" on page 6-3
- "Using SMIT to Install Optional Software" on page 6-5
- "Installing Optional Software with a VSM Application" on page 6-16
- "Removing Software" on page 6-19
- "Cleaning Up Optional Software" on page 6-20

Introduction to Installing Optional Software

Optional Software

6

After the Base Operating System (BOS) is installed, you may want to install *optional software*. Optional software consists of those packages that are not installed on the system as part of the BOS installation. For more detailed information, refer to Appendix B, "Optional Software Installation Concepts."

For information on removing installed software, refer to "Removing Software" on page 6-19. For information on cleaning up after an interrupted software installation, refer to "Cleaning Up Optional Software" on page 6-20.

Software Licensing

Software is selected for installation if it is in the bundle you choose and on the installation medium. Normally, software requiring a license is only selected if you have the license for that software.

The SMIT Custom Install and the VSM Install and Update Software Manager applications allow you to install software that requires a license, even if you do not have a license. However, you are not able to run the software until you have obtained the license.

Prerequisites for Installing Optional Software

Prior to installing optional software, refer to the specific instructions that accompany your installation medium.

Note Vendors who want information about how to develop software products that are installed using the `installp` command should refer to *General Programming Concepts: Writing and Debugging Programs*.

The software you are installing may be available on a physical medium (such as a CD-ROM or diskette) or may be located in a directory on your system (for example, the directory `/usr/sys/inst.images`).

Before installing optional software, complete the following prerequisites:

1. Install the AIX 4.1 BOS on your system. If the BOS is not yet installed on your system, go to Chapter 4, "Installing the BOS from Your Installation Medium."
2. Log in as `root`.
3. If you currently have a mounted InfoExplorer CD-ROM in the same CD-ROM drive from which you want to install, do the following:
   a. Determine if the InfoExplorer process is running. Enter:

      `ps -ef | grep infod`

      If the `infod` process is found, enter:

      `kill` *process_id*

      where *process_id* is the number associated with the `infod` process.

b. Use the `umount` command to unmount the CD-ROM.

   For example, if you currently have InfoExplorer mounted from a CD-ROM, you would enter:

   ```
   umount /usr/lpp/info/Language
   ```

   where *Language* is the name of the language you are using.

c. Remove the InfoExplorer CD-ROM from the CD-ROM drive.

4. Insert the medium that contains the optional software into the appropriate drive.

5. If you want to use:

   - the SMIT menus to install optional software, refer to "Using SMIT to Install Optional Software" on page 6-5.
   - one of the Visual System Management (VSM) applications, refer to "Installing Optional Software with a VSM Application" on page 6-16.

Using SMIT to Install Optional Software

SMIT Installation Paths

There are two installation paths available in SMIT—the Easy Install path and the Custom Install path:

Easy Install

Using the Easy Install path, you only need to specify the input device and which bundle you are installing. The SMIT Easy Install allows you to view the contents of a bundle. You are not able to preview the installation or do any of the other more advanced options that are available through Custom Install.

The Easy Install path only installs the software for which you have a license.

Custom Install

The SMIT Custom Install allows more advanced functions, such as previewing the installation. You can specify the software for which you do not have a license to be installed. However, you are not able to run this software until you acquire the license. Use Custom Install to install the InfoExplorer databases.

Custom Install Options

Table 6-1 describes the options that are available under the `Custom Install` path:

Table 6-1. SMIT Install Options

Option...	Description
`Install Software Products at Latest Level`	installs one or more of the optional software products that exist on the installation medium **Note** Do not use the `Install Software Products at Latest Level` option to install device packages. You should use the `Install Additional Device Software` option for this type of installation.
`Install Bundles of Software`	installs a collection of software products
`Install Fileset Updates by Fix`	installs one or more of the fileset updates that exist on the installation medium **Note** The `Install Fileset Updates by Fix` option is not supported by the AIX 4.1 installation medium.
`Install Additional Printer/Plotter Software`	installs printer and plotter software that exists on the installation medium
`Install Additional Device Software`	installs device software that exists on the installation medium **Note** Alternate paths are available in SMIT for installing software for specific types of devices. These paths can be accessed by selecting the `Devices` option from the SMIT main menu and following the path for the appropriate device type. However, the `Install Additional Device Software` option allows you to install any of these types of device software.

Table 6-1. SMIT Install Options (continued)

Option...	Description
`Install/Update From All Available Software`	enables you to select for installation from all the optional software products, maintenance levels, and updates that exist on the installation medium **Note** If a problem occurs during the installation of optional software that causes the process to halt abnormally, you may have to complete a cleanup procedure to remove the partially installed software from the system before attempting to reinstall it. If the system instructs you to do a cleanup, go to "Cleaning Up Optional Software" on page 5-20.

Getting Help with Using SMIT

If you are not familiar with the SMIT interface and want help on using SMIT, complete the following steps:

1. At the command line prompt, enter:

   ```
   smit
   ```

2. Select the `Using SMIT (information only)` option.

   Result: The `General Help` screen is displayed.

Accessing SMIT Installation Menus

This section provides example SMIT screens as they appear using an ASCII display. If your system is running AIXwindows, the SMIT screens you see may not exactly match the ones shown in this section. However, the options provided are identical in either interface.

At the system prompt, enter:

```
smit install_update
```

If your system is running AIXwindows, but you want to use the ASCII SMIT interface, enter:

```
smit -C install_update
```

The Install and Update Software screen displays. From this screen, you can choose whether to continue along the Easy Install or Custom Install path:

```
                    Install and Update Software

Move cursor to desired item and press Enter.

    Install Bundles of Software (Easy Install)
    Install/Update Selectable Software (Custom Install)
    Copy Software to Hard Disk for Future Installation
    List All Software on Installation Media
    List All Problems Fixed by Software on Installation Media
    List User Instructions for Update Media
    Clean Up After an Interrupted Installation



F1 = Help   F2 = Refresh    F3 = Cancel     F8 = Image
F9 = Shell  F10 = Exit      Enter = Do
```


Using Easy Install in SMIT

This section details the procedure for installing the bundle contents following the Easy Install path. The same procedure can be followed for viewing the bundle contents. The SMIT screens that you use vary depending on which option you choose.

Use the following procedure to install a bundle:

1. Select the Install Bundles of Software (Easy Install) option from the Install and Update Software screen.

Result: The `Install Bundles of Software (Easy Install)` screen displays:

```
            Install Bundles of Software (Easy Install)

Move cursor to desired item and press Enter.

    View Bundle Contents
    Install Bundle Contents









F1 = Help   F2 = Refresh    F3 = Cancel     F8 = Image
F9 = Shell  F10 = Exit      Enter = Do
```

2. Select the `Install Bundle Contents` from the `Install Bundles of Software (Easy Install)` screen, and press Return.

   Result: A screen displays asking you to specify an input device or directory.

3. Display the list of the available input devices or directories. The input *device* is the diskette or installation medium drive that you are using to install the software.
   The input *directory* is the directory on your system that contains the software for installation (for example, the `/usr/sys/inst.images` directory).

4. Select an input device or directory.

   The device or directory you selected is displayed in the `INPUT device/directory for software` field, and the `Bundle to install` pop-up screen is displayed.

5. Select a bundle from the list. The bundle you selected now displays in the new entry field.

6. Press Return to begin the installation process.

   Result: The following message displays:

   ```
   ARE YOU SURE?
   ```

   The message displays to confirm that you want to continue with the installation.

7. Confirm your selections to continue with the installation.

   As the installation progresses, status messages are written on the screen display. A log is kept of the installation activities.

   For information on using these logs, refer to "Reviewing Message Logs" on page 6-14.

Using Custom Install in SMIT

This section details the procedure for installing software products using the `Custom Install` path with the `Install/Update From All Available Software` option. The same procedure can be followed for the other options listed in the `Install/Update Selectable Software (Custom Install)` screen. The SMIT screens that you use vary depending on which option you choose to update your system.

Note Do not use the `Install Software Products at Latest Level` option to install device packages. Use the `Install Additional Device Software` option for this type of installation.

Use the following procedure to install optional software:

1. Select the `Install/Update Selectable Software (Custom Install)` option from the `Install and Update Software` screen.

Result: The `Install/Update Selectable Software (Custom Install)` screen displays:

```
       Install/Update Selectable Software (Custom Install)

Move cursor to desired item and press Enter.

    Install Software Products at Latest Level
    Install Bundles of Software
    Install Fileset Updates by Fix
    Install Additional Printer/Plotter Software
    Install Additional Device Software
    Install/Update From All Available Software




F1 = Help   F2 = Refresh    F3 = Cancel     F8 = Image
F9 = Shell  F10 = Exit      Enter = Do
```

2. Select the `Install/Update From All Available Software` option from the `Install/Update Selectable Software (Custom Install)` screen.

   You are asked to specify an input device or directory.

3. Display the list of the available input devices or directories.

   The input *device* is the diskette or installation medium drive that you are using to install the software. The input *directory* is the directory on your system that contains the software for installation (for example, the `/usr/sys/inst.images` directory).

4. Select an input device or directory.

   The device or directory you selected now displays in the INPUT device/directory for the software entry field. The input directory is the directory containing software for installation.

   The screen that displays next lists the different installation options:


```
                Install Software Products From All Available Software

   Type or select a value for the entry fields.
   Press Enter AFTER making all desired changes.

                                                        [Entry Fields]
   INPUT device/directory for software                  [/dev/cd0]      +
   SOFTWARE to install                                  []              +
   PREVIEW only? (install operation will NOT occur)     no              +
   COMMIT software updates?                             yes             +
   SAVE replace files?                                  no              +
   ALTERNATE Save Directory                             []              +
   AUTOMATICALLY install requisite software?            yes             +
   EXTEND file systems if space needed?                 yes             +
   OVERWRITE same or newer versions?                    no              +
   VERIFY install and check file sizes?                 no              +
   INCLUDE corresponding LANGUAGE packages?             yes             +
   DETAILED output?                                     no              +


F1 = Help       F2 = Refresh        F3 = Cancel         F4=List
F5=Undo         F6=Command          F7=Edit             F8 = Image
F9 = Shell      F10 = Exit          Enter = Do
```

5. Display a list of available software products or bundles.

6. Verify whether you want to keep or change the remaining default installation settings. Use the SMIT online help for each field to determine if you want to use the default setting.

7. If you wish to preview the results of the installation before actually installing the software, select the PREVIEW only? (install operation will NOT occur) field, and change the setting to a yes value.

8. Confirm your selections when you are satisfied with all the settings on this screen.

   Result: The ARE YOU SURE? message displays to confirm that you want to continue with the installation.

   If you set the preview function to `yes`, then installation does not actually occur. In this case, repeat this procedure with the preview function set to `no` when you want to install the software.

As the installation progresses, status messages display on the screen. A log is kept of the installation activities.

Refer to "Reviewing Message Logs" on page 6-14 for more information on using these logs.

Reviewing Message Logs

This section describes the system's activity and what you need to do after the installation process has begun.

1. When the screen returns to the top of the list of messages displayed at the completion of installation, you can review the message list as described in the next step, or you can exit SMIT and review the `smit.log` file (`/smit.log` or `/home/`*user_id*`/smit.log`).
2. Review the message list for error messages and software products that may not have been installed.
3. Use the following procedure to correct any errors in the installation:
   a. Look at the pre- and post-installation summaries at the end of the message list to see if an installation failure occurred.
   b. Use the message list to determine problems and find which software products were involved. For example, space limits may have been exceeded or the requisites may not have been met for some software. The system lists how

much extra space is needed and which requisite software products to install.

c. Reinstall any product that is marked as FAILED, BROKEN, or CANCELLED. You do not need to reinstall any software product that was marked as SUCCESS in the Installp Summary report.

   If you need to perform the installation again, change installation settings as appropriate. For example, if requisites were missing, set AUTOMATICALLY install requisite software? to yes. If there was not enough space to complete the installation, set EXTEND file systems if space needed? to yes.

d. If the installation was interrupted, you may need to use the cleanup procedure before continuing. Exit SMIT. Refer to "Cleaning Up Optional Software" on page 6-20.

e. When all software has been installed successfully, continue with the next step.

4. If you need to install additional software from another installation medium of the same kind, do the following:

   a. Remove the installation medium from the drive.

   b. Insert the installation medium for the software you are installing into the drive.

   c. Return to the previous screen and continue installing the software product from the installation medium.

5. Exit SMIT.

6. Remove the installation medium from the drive.

Installing Optional Software with a VSM Application

The graphical interface provides access to two Visual System Management (VSM) applications for installing optional software. To access the VSM applications, select them from your desktop or enter the appropriate commands from AIXwindows or the AIXwindows Desktop.

Refer to the sections “Easy Install” on page 6-16 or “Install and Update Software Manager” on page 6-17 for detailed information on how to access these applications.

See *Getting Started* for information about how to access the graphical interface and how to work with VSM applications.

Easy Install

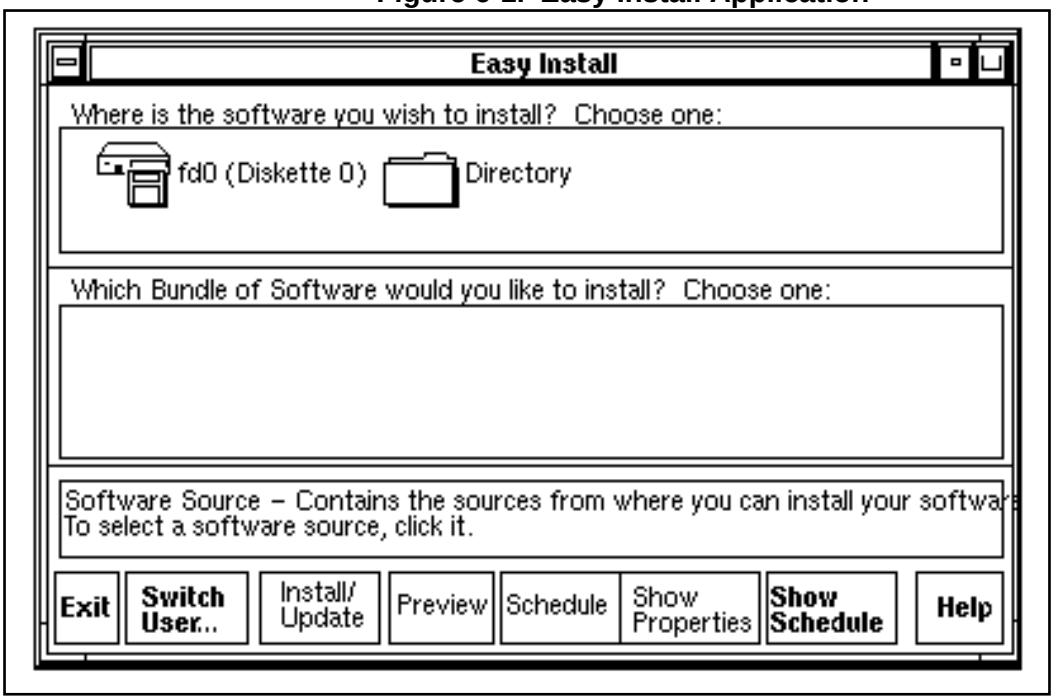
The Easy Install option provides a means of installing a software bundle that requires minimal decision-making. Selecting how the software bundle is to be installed (from a directory, for example) and which software bundle is to be installed are the basic decisions required by this application.

To invoke Easy Install, enter:

```
xinstallm -ez
```

Figure 6-1 shows the Easy Install application.

Figure 6-1. Easy Install Application



Install and Update Software Manager

The Install and Update Software Manager application allows you to install software, change the system's default install settings, and specify other options. For example, you can choose whether to commit a software update while installing it. You can also create your own bundle for installation by selecting software packages and filesets from different bundles and the installation medium.

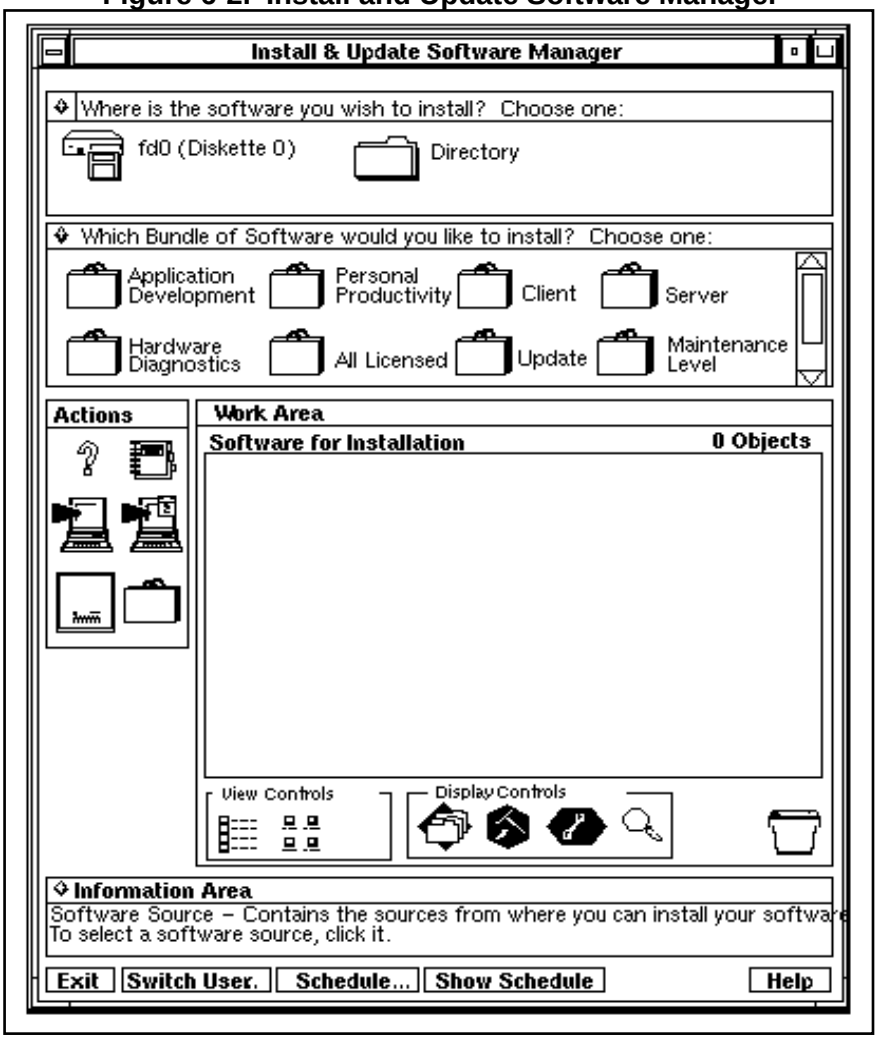
You can also specify the installation of software for which you do not have a license. However, you cannot run the software until you acquire the license for it.

To invoke the Install and Update Software Manager, enter:

```
xinstallm
```

Figure 6-2 shows the Install and Update Software Manager application:

Figure 6-2. Install and Update Software Manager



See “Reviewing Message Logs” on page 6-14 for information about status and error messages you may need to consult.

Removing Software

When you install a base level fileset, it is automatically committed during installation. If you want to delete a fileset, it must be removed (as opposed to rejected) from the system. The Base Operating System (`bos.rte`) cannot be removed, and certain other products cannot be removed if the software is in use. For example, the `devices.scsi.disk` fileset cannot be removed from a stand-alone system, because it controls the disk on the system.

If something should go wrong during the software installation so that the installation is prematurely canceled or interrupted, a *cleanup* must be run. Detailed information and the procedure for cleaning up software are included in "Cleaning Up Optional Software" on page 6-20.

To remove software filesets, use the following command:

```
smit install_remove
```

Cleaning Up Optional Software

This section describes the cleanup procedure for optional software products. The cleanup procedure attempts to delete software products that were partially installed or that have been left in an "ing" state. The "ing" states (*applying*, *committing*, *rejecting*, *removing*) indicate that the action you were attempting did not complete successfully.

The output of the `lslpp` command with the `-l` option indicates the state of the software products on the system.

Automatic and Manual Cleanups

The system automatically performs a cleanup when an installation cannot be completed because of a failure or interruption. The only conditions under which you may have to manually clean up the system is when:

- the system shuts down or loses power during an installation
- the installation process terminates abnormally

Occasionally, you are prompted to reboot (restart) the system after running the cleanup procedure.

For more information on the cleanup process and the output from the `installp` command (which includes the different software states), refer to Appendix B, "Optional Software Installation Concepts."

The Cleanup Process

The cleanup process attempts to revert the product to its previous state. For example, if you have a product in the committing state, then the cleanup procedure attempts to delete the failed installation and restore the previous version of the product (if there is one). In this case, the previous version of the product becomes the active version. If the previous version of the product cannot be restored, then the software product enters the BROKEN state. If the cleanup procedure has deleted the product or if the product is in the BROKEN state, you can attempt to reinstall the software.

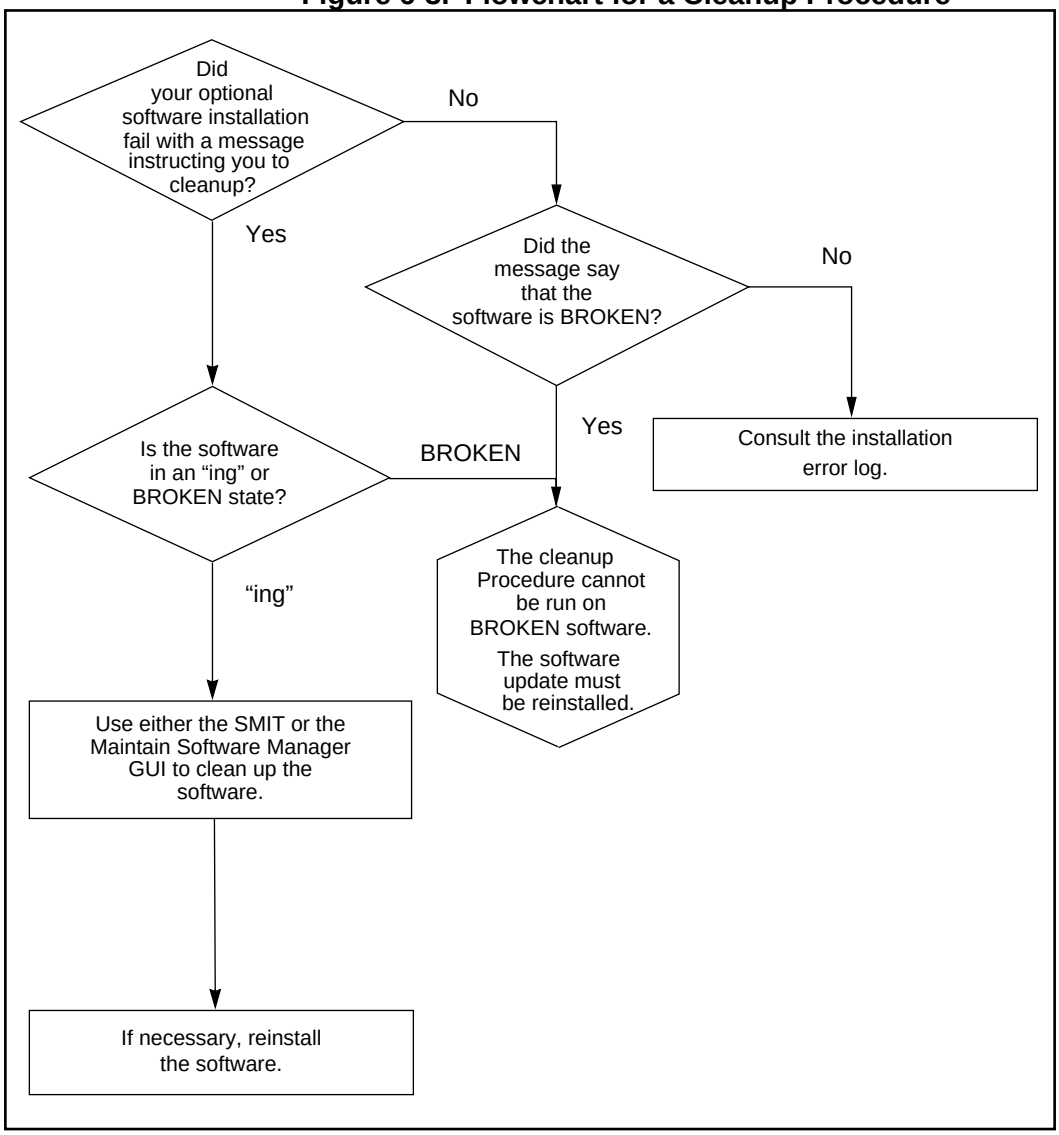
Any product that was already in the BROKEN state cannot be cleaned up; it can only be reinstalled or removed.

Note This procedure applies only to the installation of optional software products. If your AIX 4.1 Base Operating System installation was unsuccessful, refer to the *Installation Troubleshooting* booklet.

Cleanup Process Flowchart

Figure 6-3 outlines the cleanup procedure for a failed optional software installation.

Figure 6-3. Flowchart for a Cleanup Procedure



Cleaning Up Software Procedures

This section contains a procedure for cleaning up software with the System Management Interface Tool (SMIT) and information about cleaning up software with the Maintain Software Manager graphical interface.

The `installp -C` command can also be used to clean up software.

Cleaning Up Software using SMIT

Use this procedure to clean up your system after an unsuccessful installation of software other than the Base Operating System. Perform this procedure if the system instructed you to perform a cleanup when you attempted to install optional software.

1. Log in as root.
2. Enter the following SMIT command:

   ```
   smit install_update
   ```

   In the AIXwindows environment, enter:

   ```
   smit -C install_update
   ```

   Result: The `Install and Update Software` screen displays.
3. Select the `Clean Up After an Interrupted Installation` option.

   Result: The system then:

   - attempts to delete software products that were partially installed
   - attempts to revert to the previous version of any deleted products

   If the system successfully reverts to the previous version, it becomes the currently active version. If this cannot be done, then the software product is marked as `BROKEN`.

   The `COMMAND STATUS` screen displays.

4. When the `Command: status` field changes to `OK` in the upper-left corner of the screen, you have two choices:

   - If the cleanup process completes successfully, you can attempt to reinstall the software.
   - If you get a message indicating that no products were found that could be cleaned up, then you may have executed the cleanup procedure when it was not needed. Try your installation again. If you get a message indicating that you need to clean up a failed installation, contact your point of sale for assistance.

Cleaning Up Software using a VSM Application

The graphical interface provides access to the Visual System Management (VSM) Maintain Software Manager application.

The Maintain Software Manager application illustrates the relationships among:

- products
- packages
- filesets
- maintenance levels
- fixes in a graphical format

The application provides a way to clean up software after an interrupted installation of software other than the Base Operating System.

Perform this procedure if the system instructed you to perform a cleanup when you attempted to install optional software. You must have root authority to use this application. See *Getting Started* for information about how to access the desktop and how to work with VSM applications.

Where Do I Go Next?

The installation of optional software is now complete. You may want to create a new backup of your system. Refer to the *Making and Using Backups* booklet.

Additional Software Installation Information A

Overview

The BOS installation program first installs the Base Operating System Runtime (`bos.rte`) image, then the Base Operating System (`bos`) fileset. Refer to the *Release Notes* that came with your system for specific information on the size requirements for installation.

The installation program automatically installs required message filesets and devices filesets, according to the language you choose and the hardware configuration of the installed machine.

AIXwindows (X11) Licensed Program

This list includes only `X11` filesets that the installation program automatically installs.

The installation program automatically installs the following products only if a graphics display was used as the console during the installation. These products may be installed later by selecting the `Graphics_Startup` bundle.

Note The disk space required to install the `Graphics_Startup` bundle is 50MB, plus at least 32MB of paging space.

- AIXwindows:
  - X11 Libraries
  - Runtime Environment
  - Motif Runtime Environment
  - aixterm Client Compatibility
  - Display PostScript Copyright
  - Default Fonts
- The following graphical system management applications:
  - Installation Assistant
  - Graphical SMIT
  - Visual System Management
- Language-Specific Locale Support
- Desktop Runtime Libraries
- Desktop Helps
- Motif Window Manager

Factory Preinstalled Software

If your system was preinstalled in the factory, the following software was installed on the system:

- basic network functionality
- license server
- InfoExplorer databases
- `Graphics_Startup` bundle (standard AIX 4.1 only)
- NCDware (standard AIX 4.1 only)

To list all the software installed on your system, enter the following command:

```
lslpp -L
```

Filesets Not Found During Installation

During installation of the `app-dev` bundle or the `bos.txt` filesets, you may receive error messages indicating that these filesets could not be found on the installation medium:

- `dps.fnt`
- `dps.rte`
- `xlC.C`
- `xldb`
- `UMS.*`
- `dce.*`

Ignore these messages. The filesets that were not found on the installation medium are included in separately licensed program products (LPPs) and are not included on your installation medium.

If you try to install `bos.txt.xpv.dps`, you may also receive a message indicating that this fileset could not install. (This fileset does not install automatically during a system installation.) `bos.txt.xpv.dps` cannot be installed because its requisite filesets, `dps.fnt` and `dps.rte`, are not available on the installation medium.

Filesets Not to Install

The IBM diagnostic filesets listed in Table A-1 are still packaged in the product but should not be installed. (These filesets are not installed automatically.) Installing these filesets may cause problems with your system:

Table A-1. Diagnostic Filesets Not to Install

Diagnostics	Fileset Name
Hardware Diagnostics	bos.diag
Hardware Diagnostics Messages - German IBM-850	bos.msg.De_DE.diag.rte
Hardware Diagnostics Messages - U.S. English IBM-850	bos.msg.En_US.diag.rte
Hardware Diagnostics Messages - Spanish IBM-850	bos.msg.Es_ES.diag.rte
Hardware Diagnostics Messages - French IBM-850	bos.msg.Fr_FR.diag.rte
Hardware Diagnostics Messages - Italian IBM-850	bos.msg.It_IT.diag.rte
Hardware Diagnostics Messages - Japanese	bos.msg.Ja_JP.diag.rte
Hardware Diagnostics Messages - Belgian Dutch IBM-850	bos.msg.Nl_BE.diag.rte
Hardware Diagnostics Messages - Norwegian IBM-850	bos.msg.No_NO.diag.rte
Hardware Diagnostics Messages - Swedish IBM-850	bos.msg.Sv_SE.diag.rte
Hardware Diagnostics Messages - German	bos.msg.de_DE.diag.rte
Hardware Diagnostics Messages - U.S. English	bos.msg.en_US.diag.rte
Hardware Diagnostics Messages - Spanish	bos.msg.es_ES.diag.rte
Hardware Diagnostics Messages - French	bos.msg.fr_FR.diag.rte
Hardware Diagnostics Messages - Italian	bos.msg.it_IT.diag.rte
Hardware Diagnostics Messages - Japanese IBM-eucJP	bos.msg.ja_JP.diag.rte
Hardware Diagnostics Messages - Korean	bos.msg.ko_KR.diag.rte
Hardware Diagnostics Messages - Belgian Dutch	bos.msg.nl_BE.diag.rte
Hardware Diagnostics Messages - Norwegian	bos.msg.no_NO.diag.rte
Hardware Diagnostics Messages - Swedish	bos.msg.sv_SE.diag.rte
Hardware Diagnostics Messages - Traditional Chinese	bos.msg.zh_TW.diag.rte
Performance Diagnostic Tool	bos.perf
GXT100 Graphics Adapter Diagnostics	devices.buc.00004001.diag
GXT150 Graphics Adapter Diagnostics	devices.buc.00004005.diag

Table A-1. Diagnostic Filesets Not to Install (continued)

Diagnostics	Fileset Name
GXT150L Graphics Adapter Diagnostics	devices.buc.00004006.diag
GXT155L Graphics Adapter Diagnostics	devices.buc.00004007.diag
FDDI Adapter (8ef4) Diagnostics	devices.mca.8ef4.diag
Ethernet High-Performance LAN Adapter (8ef5) Diagnostics	devices.mca.8ef5.diag
Portmaster Adapter/A Diagnostics	devices.mca.8f70.diag
Token Ring High-Performance Adapter (8fc8) Diagnostics	devices.mca.8fc8.diag
Direct Attached Disk Diagnostic	devices.mca.df9f.diag
8-Port Asynchronous Adapter EIA-232 Diagnostics	devices.mca.edd0.diag
Graphics Input Adapter and Device Diagnostics	devices.mca.edd5.diag
128-Port Asynchronous Adapter Diagnostics	devices.mca.ffe1.diag
Device Diagnostics Messages - German IBM-850	devices.msg.De_DE.diag.rte
Device Diagnostics Messages - U.S. English IBM-850	devices.msg.En_US.diag.rte
Device Diagnostics Messages - Spanish IBM-850	devices.msg.Es_ES.diag.rte
Device Diagnostics Messages - French IBM-850	devices.msg.Fr_FR.diag.rte
Device Diagnostics Messages - Italian IBM-850	devices.msg.It_IT.diag.rte
Device Diagnostics Messages - Japanese	devices.msg.Ja_JP.diag.rte
Device Diagnostics Messages - Belgian Dutch IBM-850	devices.msg.Nl_BE.diag.rte
Device Diagnostics Messages - Norwegian IBM-850	devices.msg.No_NO.diag.rte
Device Diagnostics Messages - Swedish IBM-850	devices.msg.Sv_SE.diag.rte
Device Diagnostics Messages - German	devices.msg.de_DE.diag.rte
Device Diagnostics Messages - U.S. English	devices.msg.en_US.diag.rte
Device Diagnostics Messages - Spanish	devices.msg.es_ES.diag.rte
Device Diagnostics Messages - French	devices.msg.fr_FR.diag.rte
Device Diagnostics Messages - Italian	devices.msg.it_IT.diag.rte
Device Diagnostics Messages - Japanese IBM-eucJP	devices.msg.ja_JP.diag.rte
Device Diagnostics Messages - Korean	devices.msg.ko_KR.diag.rte
Device Diagnostics Messages - Belgian Dutch	devices.msg.nl_BE.diag.rte
Device Diagnostics Messages - Norwegian	devices.msg.no_NO.diag.rte
Device Diagnostics Messages - Swedish	devices.msg.sv_SE.diag.rte
Device Diagnostics Messages - Traditional Chinese	devices.msg.zh_TW.diag.rte

Table A-1. Diagnostic Filesets Not to Install (continued)

Diagnostics	Fileset Name
Common Disk Diagnostic Service Aid	devices.scsi.disk.diag.com
SCSI CD_ROM Disk Device Diagnostics	devices.scsi.disk.diag.rte
SCSI Tape Device Diagnostics	devices.scsi.tape.diag
Serial Graphics Input Adapter and Device Diagnostics	devices.serial.gio.diag
Diskette Adapter and Device Diagnostics	devices.sio.fda.diag
Keyboard Tablet & Mouse Device and Adapter Diagnostics	devices.sio.ktma.diag
Parallel Printer Adapter Diagnostics	devices.sio.ppa.diag
Built-in Serial Adapter Diagnostics	devices.sio.sa.diag
Gt1 Graphics Adapter Diagnostics	devices.sys.sga.diag
Serial Optical Link Diagnostics	devices.sys.slc.diag
Gt1x Graphics Adapter Diagnostics	devices.sys.wga.diag

Optional Software Installation Concepts B

Overview

This section supplements the procedures described in Chapter 6, “Installing and Removing Optional Software.” Understanding the concepts in this appendix may assist you in installing optional software products on your system.

This appendix includes:

- “Packaging of Software Products” on page B-2
- “Software Product Identification” on page B-5
- “Error Messages and Output from the installp Command” on page B-6
- “Reinstalling a Software Product” on page B-11
- “Creating Installation Images on a Hard Disk” on page B-12
- “Explanation of Requisites and Dependents” on page B-13

B

Packaging of Software Products

Application developers who want to develop software packages to be installed with the `installp` command should refer to *General Programming Concepts Volume 1: Writing Programs.*

The packaging of software products is divided into three categories: *products*, *packages*, and *filesets*. A product may be composed of several packages, which in turn are composed of different filesets. A product may be installed in its entirety, or only certain packages or filesets for the product may be installed.

The installation software product is divided in this way so it can be used independently of other software products. You may prefer to install all the filesets included in a package, just the filesets you need, or the entire product. However, if you have limited hard disk space on your system, you want to install only selected filesets.

The installation packaging of each fileset in a product may have been divided into three parts: the `usr`, `root`, and `share` parts, which are described below:

`usr` The `usr` part of a software product contains the part of the product that can be shared by machines that have the same hardware architecture. Most of the software that is part of a product usually falls into this category.

In a standard system, the `usr` parts of products are stored in the `/usr` file tree. For example, the `ls` command would be in the `/usr/bin/ls` file.

`root` The `root` part of a software product contains the part of the product that cannot be shared. In a client/server environment, these are the files for which there must be a unique copy for each client of a server. Most of the `root` software is associated with the configuration of the machine or product.

In a standard system, the `root` parts of a product are stored in the root (`/`) file tree. The `/etc/objrepos` directory contains the `root` part of an installable software product.

`share` The `share` part of a software product contains the part of the product that can be shared among machines, even if they have different hardware architectures. This would include nonexecutable text or data files. For example, the `share` part of a product might contain documentation written in ASCII text or data files containing special fonts.

In a standard system, the `share` parts of products are usually stored in the `/usr/share` file tree. For example, a dictionary database might be stored in the `/usr/share/dict/words` file.

This parceling of a software product allows a product to be installed on one machine (called the *server*) and then be used remotely by other machines on a network (called the *clients*).

The `share` part of a product is optional because many products may not have any files that can be shared among different hardware platforms. The `share` part of a product is always packaged in a separately installable package. Every product has a `usr` part. The `usr` and `root` parts of a product are packaged together in the same installable package.

B

Software Product Organization

Software products include those shipped with AIX and those purchased separately. Each software product can contain separately installable units. The following explains how software products are organized:

licensed program — a complete software product including all packages associated with that licensed program

For example, `bos` (the Base Operating System) is a licensed program.

package — a group of separately installable units that provide a set of related functions

For example, `bos.net` is a package.

fileset — an individually installable option

Filesets provide a specific function. For example, `bos.info.en_US` is a fileset.

bundle — a collection of packages or individual filesets that fulfill a specific purpose, such as providing personal productivity software or software for a client machine in a network environment

A set of bundles is provided with the BOS that contains a specific set of optional software. However, you can create your own bundle by using the Install and Update Software Manager desktop application. These applications provide a list of individually installable filesets from the different packages. You can select the filesets you want installed, whether or not they belong to the same package group. A bundle may include several licensed programs or parts of several licensed programs.

Software Product Identification

The product name and level number identify a software product. The level of a software product in AIX 4.1 is defined as *vv.rr.mmmm.ffff*. Following is a description of its fields:

vv	numeric field of 1 to 2 digits that identifies the version number
rr	numeric field of 1 to 2 digits that identifies the release number
mmmm	numeric field of 1 to 4 digits that identifies the modification level
ffff	numeric field of 1 to 4 digits that identifies the fix level

For example, 04.01.0000.0000 is a software product level number, and 04.01.0001.0032 is a software product update level.

It is not necessary to include the leading zeroes in the version, release, modification level, and fix level fields of the level. Level 04.01.0000.0000 can also be written as 4.1.0.0.

The *vv.rr.mmmm.ffff* part of the level field is checked to find if the level being installed is later than that on the system. These fields increase for each subsequent release of a product. The higher precedence of the four fields goes from left to right (that is, level 4.2.0.0 is a later level than 4.1.3.4).

B

Error Messages and Output from the installp Command

Command Status Messages

When the `installp` command is run from the SMIT installation menus, the `Command Status` screen shows:

- `Command:OK` if all of the installations that are attempted by the command are successful

  The `installp` return code is zero.

  A `Command:OK` message does not mean that all products in the input list for `installp` were installed. If a product's installation is never started, the `Command:OK` message may be displayed even though the product is not installed.

- `Command:Failed` if any of the attempted installations fails

  The `installp` return code is nonzero.

  A `Command:Failed` message means that the installation of at least one product was started but did not complete

Other error messages may be displayed for products for which the installation cannot be started. Errors that can cause a product installation not to be started include errors such as:

- the necessary requisites not being installed
- the specified product not being on the installation medium
- the product already being installed at the specified level

Informational Messages

Besides displaying error messages from the `installp` command, the `Command Status` screen also displays many informational messages from `installp` on the progress of the product installations. Because the output from the `installp` command can be quite long, it is recommended that the output is sent to a file when `installp` is run from the command line. When `installp` is run from the SMIT installation menus, its output is stored in the `smit.log` file. If you used the `su` command to become the root user, then the `smit.log` file is in the home directory.

Pre- and Post Installation Summary Reports

The output from the `installp` command contains both a preinstallation and post-installation summary.

To determine if there were any products for which the installation could not begin, check the messages in the preinstallation summary. This information shows a statistic for each products whose installation was not attempted due to missing requisite software or other requisite problems. Once preinstallation checking is complete, you see a message similar to:

```
The following software products will be applied:
```

(This message varies depending on the installation action that is taken.)

A summary report is provided at the end of the installation process. This report lists the status of each of the product installations that was attempted. For those products that could not be installed or whose installation failed, you can search for the cause in the detailed messages that appear during the installation process.

The error messages in the preinstallation and post-installation summaries reveal the installation status of all products included in the input list. If you note any failures in these summaries, search on `FAIL` in the `installp` command's output to locate where the source of the failure is documented.

Sample Summary Report

An example summary report is given below, along with the command that produced it:

```
# installp -acd/usr/sys/inst.images sx25.rte

Installation Summary
--------------------

Name       Fix Id  Part    Event   Result      State
-------------------------------------------------------------------------------
sx25.rte           USR     APPLY   SUCCESS     APPLIED
sx25.rte           ROOT    APPLY   SUCCESS     APPLIED
sx25.rte           USR     COMMIT  SUCCESS     COMMITTED
sx25.rte           ROOT    COMMIT  SUCCESS     COMMITTED
```

Reading a Summary Report

The summary report identifies the software that was acted upon. It gives the following information:

- product fileset name
- fix ID (if applicable)
- update ID (if applicable)
- product part
- requested action (event)
- result of the action
- resultant state of the product fileset

Event Column

The Event column of the summary report identifies the action that has been requested of the installp command. The following values may be found in this column:

Event	Definition
APPLY	An attempt was made to apply the specified fileset.
COMMIT	An attempt was made to commit the specified fileset.
REJECT	An attempt was made to reject the specified fileset.
CLEANUP	An attempt was made to perform cleanup for the specified fileset.

Result Column

The Result column of the summary report gives the result of installp performing the requested action. It can have the following values:

Result	Definition
SUCCESS	Specified action succeeded.
FAILED	Specified action failed.
CANCELLED	Although preinstallation checking passed for the specified fileset, it was necessary to cancel the specified action before it was begun. Interrupting the installation process with Ctrl-C can sometimes cause a cancelled action, although, in general, a Ctrl-C interrupt causes unpredictable results. You can attempt to install an update again later in the installation process if a new installp program is being installed.

Note CANCELLED is also displayed if you are installing an installp fix.

State Column

The `State` column of the summary report gives the state of the product fileset after the `installp` command has run. It can have the following values:

State	Definition
`APPLIED`	Specified fileset is applied.
`COMMITTED`	Specified fileset is committed.
`AVAILABLE`	Specified fileset does not exist on the system but is known to be available on some medium.
`BROKEN`	Specified fileset is broken and should be reinstalled before being used.
`APPLYING`	An attempt was made to apply the specified fileset, but it did not complete successfully, and cleanup was not completed.
`COMMITTING`	An attempt was made to commit the specified fileset, but it did not complete successfully, and cleanup was not completed.
`REJECTING`	An attempt was made to reject the specified fileset, but it did not complete successfully, and cleanup was not completed.

Reinstalling a Software Product

If you attempt to install the product level of a software product that is already installed on the system, then you are *reinstalling* the product. A product can be reinstalled at the same, earlier, or later level. (*Level* refers to the version and release of the product.)

Reinstalling at Same or Earlier Level

If you are reinstalling a product at the same or earlier level, then you must use the force option. If you are installing from the command line, use the `installp` command with the `-F` option.

If you must use the force option, enter the `smit install_selectable_all` command and choose only those product filesets you want to install. You can only select the base level of a product, because updates cannot be installed during a forced installation.

Note The force option and the `AUTOMATICALLY install requisite software?` options are mutually exclusive.

After you complete the forced reinstallation of a product, you can update the product by entering SMIT with the `smit install_fileset` command.

Reinstalling a Later Version

If you are reinstalling a product at a later version, then enter SMIT with the `smit install_latest` command (without specifying the forced option), and the updates will also be installed.

B

Creating Installation Images on a Hard Disk

Installable image files (or installation packages) can be copied to the disk for use in future installations. These image files are copied from your installation medium to a directory on the disk so that they may be installed later using the disk directory as the input device. These files are copied to a default directory named `/usr/sys/inst.images`.

The image files within the disk directory are named:

prodname.part.level

where *prodname* is the name of the software product or update, *part* is `usr` for the usr and root parts of a product or `shr` for share parts, and *level* is the complete version number of the product.

You should use the `bffcreate` command to create the installable image.

Explanation of Requisites and Dependents

B

What Are Requisites?

A *prerequisite* software fileset is one that must be installed before another specified fileset can be installed. A *corequisite* fileset is one that must be installed at the same time as another specified fileset. If you want to know more details about requisites, see the `ckprereq` command.

Automatically Installing Requisites

When you attempt to install filesets for which requisite software has not been installed, you receive an error message indicating that certain requisite software must first be installed. If you want to see what requisites will be installed, use the preview option. You may want to specify detailed output with the preview option to see the complete information.

- To automatically install requisites, from any of the SMIT installation menus, you should answer `yes` to the question `Automatically install PREREQUISITE software?` to have requisites automatically installed.
- To automatically install requisites, from the command line, the `-g` flag of `installp` automatically installs any requisites for the software you are installing.

What Are Dependent Filesets?

A *dependent software fileset* is one that requires the specified fileset to be installed before the dependent fileset can be installed.

Removing Dependent Filesets

Before a version of a software fileset can be removed, all filesets that are dependent upon the specified fileset must also be rejected or removed:

- To remove a dependent fileset, from the SMIT menu `Reject Applied Updates` (`Use Previous Version`), answer `yes` to the question `REJECT versions that depend on above version?` to have requisites automatically rejected
- To remove a dependent fileset, from the menu `Remove Applied Software Products`, answer `yes` to the question `Automatically remove DEPENDENT software?`
- To remove a dependent fileset, from the command line, use the `-g` flag of `installp`.

Related Information C

Overview

This section lists titles that provide more information about concepts and procedures covered in the *Operating System Installation Guide.*

Standard AIX 4.1 References

C

The following publications contain additional information related to AIX 4.1:

- *Making and Using Backups* explains how to customize a `bos.info` file, how to create a system backup and how to install from a system backup.
- *Installation Troubleshooting* provides information on diagnosing and solving common installation problems.
- "Getting Started (InfoExplorer Windows)" and "Getting Started (InfoExplorer ASCII)" in *Getting Started* describe how to begin using InfoExplorer.
- "Backup Files and Storage Media Overview" in *System User's Guide: Operating System and Devices* explains different methods of backing up on various types of backup media, restoring system backups, and guidelines for backup policies.
- "System Management Interface Tool (SMIT) Overview" in *System Management Guide: Operating System and Devices* explains the structure, main menus, and tasks that are performed with SMIT.
- "File Systems Overview" in *System Management Guide: Operating System and Devices* provides information on file system types and management.
- "Logical Volume Storage Overview" in *System Management Guide: Operating System and Devices* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.
- "Mounting Overview" in *System Management Guide: Operating System and Devices* provides information on mounting files and directories, mount points, and automatic mounts.
- "Transmission Control Protocol / Internet Protocol Overview" in *System Management Guide: Communications and*

Networks explains the basic functions of TCP/IP, including Internet.

- "Network File System (NFS) Overview for System Management" in *System Management Guide: Communications and Networks* discusses NFS daemons, commands, files, network services, and implementation.
- *Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.
- For more information, refer to the following commands in *Commands Reference*:
  - installp
  - lppchk
  - lslpp
  - `mksysb`
  - `backup`
  - `ls`
  - `smit`
  - bffcreate

FX Series Related Publications

C

The following publications contain additional information related to the FX Series system:

- *System Architecture*
- *Administering Your Fault Tolerant System*
- *FX Series Release Notes*
- *Hardware Installation*
- *System Integration*
- *Diagnosing and Troubleshooting Your Fault Tolerant System*
- *Writing a Fault Tolerant Device Driver*
- *Application Developer's Guide to CMS*
- *FX Bug Manual*
- *Managing System Storage*
- *Configuring and Maintaining the System*

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