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AIX 4.3 Installation Guide

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Software

October 1999

BULL ELECTRONICS ANGERS
CEDOC
34 Rue du Nid de Pie – BP 428
49004 ANGERS CEDEX 01
FRANCE

ORDER REFERENCE
86 A2 43GX 05

Printed in France

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Year 2000

The product documented in this manual is Year 2000 Ready.

About This Guide

This *AIX 4.3 Installation Guide* describes different ways to install Version 4.3 of the AIX Base Operating System (BOS). This guide also describes how to use the applications available for configuring your system and installing additional software.

You only need to use a portion of this Installation Guide to install BOS. Determining Your Starting Point, on page 1-1 indicates which portions of this guide are necessary to complete different types of installations and how to proceed to perform post–installation tasks, such as configuring and backing up your system and installing additional software.

The information in this book can also be found on the ”Hypertext Library for AIX 4.3” CD-ROM. This online documentation is designed for use with an HTML 3.2 web browser.

Who Should Use This Guide

This Installation Guide is intended for customers installing AIX Version 4.3 on *standalone systems*. A standalone system is a machine that can boot (start up) by itself. It may or may not be on a network. If it is on a network, it does not need the assistance of a server to boot.

If you want to manage the installation and configuration of *diskless*, *dataless*, or standalone systems from a network installation server, refer to the *AIX 4.3 Network Installation Management Guide and Reference*. Diskless and dataless systems cannot boot (start up) by themselves. They must use a remote server system to boot from the network. Diskless and dataless systems may have disk drives installed, but they do not boot from them.

Overview of Contents

The chapters of this Installation Guide are organized into the following categories. This section summarizes the contents of this guide by chapter within major tasks.

Installing the Base Operating System (BOS) from CD–ROM or Tape

Installing BOS from CD–ROM or Tape, on page 2-1 describes the different BOS installation procedures you can use depending on the state or operating system level of your system. You can accept default settings and begin the installation immediately, or you can verify or change system settings before beginning the installation.

Customizing the Installation Method

Customizing the BOS Install Program, on page 4-1 contains information about the **bosinst.data** file, which system administrators can modify to change the default settings used by the BOS installation program. Customizing the **bosinst.data** file enables you to

install BOS without the set of menus that are usually displayed, thus facilitating unattended installations.

Installing BOS from a System Backup, on page 5-1 describes how to install BOS from a previously created backup copy of your system. Use the procedure in this chapter to restore your own system, if necessary, or to install identical configurations on other machines.

Customizing the Installed System

Customizing Your Installation, on page 3-1 describes the tasks you may need to perform after you have installed BOS. These tasks include setting the date and time, setting up your local and network environments, and installing collections of software.

Installing and Maintaining Optional Software

Installing Optional Software and Service Updates, on page 6-1 describes how to install software products and fixes. You may either install an entire software product or those parts of a product that are designed to be installed separately. This chapter also describes how to get information about software products you may want to install.

Installing AIX Documentation and Installing and Configuring the Documentation Search Service, on page 7-1 describes how to install the online AIX documentation, as well as the steps required to install and configure the documentation search service.

Maintaining Optional Software, on page 8-1 describes how to commit and reject updates and remove installed software.

Backing Up Your System

Backing Up Your System, on page 9-1 describes how to create a backup image of your AIX Version 4.3 system. You can use this backup image to restore your configuration if your system becomes corrupted. You can also use a backup image to duplicate one system's configuration on other machines by installing the backup image on those machines.

Alternate Disk Installation

Alternate Disk Installation, on page 10-1 provides information about installing the system while it is still up and running. With alternate disk installation, install or upgrade down time can be decreased considerably.

Troubleshooting the Installation

Troubleshooting, on page 11-1 provides instructions for resolving installation problems.

Acting on System and Error Messages, on page 12-1 provides information about messages you may receive while performing installation procedures.

Reference Information

Viewing README Files, on page 13-1 provides instructions for viewing README files that contain late–breaking news about software you may have installed.

Optional Software Installation and Update Concepts, on page A-1 provides information about the packaging of software products and provides details about install and update functionality. This information is useful but not usually required to complete software installation and update tasks.

Software Installed Automatically during BOS Installation, on page B-1 describes the software that is automatically installed when you install BOS.

Compatibility Between AIX Version 3.2 and AIX Version 4.3, on page C-1 provides information about application compatibility between AIX Version 3.2 and AIX Version 4.3.

Migrating from AIX Version 3.2, AIX Version 4.1 or AIX Version 4.2.f, on page D-1 provides information about things to consider before migrating to AIX Version 4.3.

Glossary, on page E-1 defines terms used in this guide.

Related Information, on page F-1 lists additional documentation on topics related to the concepts and procedures discussed in this guide.

Summary of Changes

This section discusses the following elements of AIX Version 4.3 installation that differ from previous versions of AIX.

- BOS Installation, on page v
- Alternate Disk Installation, on page v
- Software Migration, on page v
- User Interfaces, on page v

BOS Installation

The installation of the Base Operating System is customized to the state of your system. The installation interface offers recommended default settings, which, if you accept them, reduce the amount of information you need to provide to the installation program. The installation menus are translated for eight languages. If you use a graphical display to install, the AIXwindows environment is automatically installed. You can customize the installation and bypass installation prompts by editing a data file read by the installation program.

For AIX Version 4.3 , memory requirements have been increased to 32 MB.

Alternate Disk Installation

A new function in AIX Version 4.3, alternate disk installation allows you to install the system while it is up and running. This allows install or upgrade down time to be decreased considerably, and it also allows large facilities to manage an upgrade because systems can be installed over a longer period of time.

Software Migration

A migration installation path allows you to move from AIX Version 3.2, Version 4.1, or AIX Version 4.2.f to AIX Version 4.3, while keeping customized configuration information and installed optional software. Any configuration files that cannot be migrated will be saved in a specific directory. System messages will inform you of the location of the saved files. Information will also be stored in the system installation log in **/var/adm/ras/devinst.log**.

Installing BOS from CD–ROM or Tape, on page D-1 describes the BOS installation migration path. Installing Optional Software and Service Updates, on page 6-1 provides information about the migration of optional software.

Compatibility between AIX Version 3.2 and AIX Version 4.3 , on page C-1 discusses compatibility between the two release levels.

User Interfaces

AIX provides two specialized graphical user interfaces for performing configuration and installation tasks:

- *Configuration Assistant* allows the user to perform a set of configuration tasks after BOS is installed on the system. (For ASCII systems, *Installation Assistant* assists you with those configuration tasks).

  Customizing Your Installation, on page 3-1 describes the Configuration Assistant and Installation Assistant applications.

- The Web-based System Manager Software application, which provides the simplest way of installing software bundles, as well as installing individual software packages and filesets. You can also use Web-based System Manager Software to commit software updates that are applied to your system, reject software updates, and remove installed software.

  Installing Optional Software and Service Updates, on page 6-1 and Maintaining Optional Software, on page 8-1 describe the Web-based System Manager Software application.

Highlighting

This book uses the following highlighting conventions:

Bold	Identifies commands, key words, files, directories, and other items whose names are predefined by the system.
Italics	Identifies parameters whose actual names or values are to be supplied by the user. Italics are also used to *emphasize* an important word or phrase or to identify a term when it is being defined.
`Monospace`	Identifies information you should actually type, as well as examples of specific data values, examples of text similar to what you might see displayed, examples of portions of program code similar to what you might write as a programmer, and messages from the system.

Sample Screens

Several chapters in this book contain *sample screens*, which help verify that you reached the correct step. Not all screen depictions, however, are identical to what you see on your display screen. The degree of variance between a sample screen and your display screen depends on your system configuration, but the sample screens should be *similar* to what you see on your display screen.

ISO 9000

ISO 9000 registered quality systems were used in the development and manufacturing of this product.

AIX Support for the X/Open UNIX95 Specification

Beginning with AIX Version 4.2.f, the operating system is designed to support the X/Open UNIX95 Specification for portability of UNIX–based operating systems. Many new interfaces, and some current ones, have been added or enhanced to meet this specification.

At the same time, compatibility with previous AIX releases is preserved. This is accomplished by the creation of a new environment variable, which can be used to set the system environment on a per–system, per–user, or per–process basis.

To determine the proper way to develop a UNIX95–portable application, you may need to refer to the X/Open UNIX95 Specification, which can be obtained on a CD–ROM by ordering the printed copy of *AIX Commands Reference*, order number 86 A2 38JX to 86 A2 43JX, or by ordering *Go Solo: How to Implement and Go Solo with the Single Unix Specification*, a book which includes the X/Open UNIX95 Specification on a CD–ROM.

Corequisite Publications

The following documents, if they apply to your installation, supplement this book:

- Documentation for installation and update media is shipped with each new release of AIX. These documents discuss updates provided by the new release and include last–minute information you should be aware of before beginning the installation.
- *AIX 4.2 Installation Guide*, order number 86 A2 05AT. Describes how to create a backup copy of an AIX Version 4.2.f system.
- *AIX 4.1 Installation Guide*, order number 86 A2 60AP. Describes how to create a backup copy of an AIX Version 4.1 system.
- *AIX Version 3.2 Installation Guide*. Describes how to create a backup copy of an AIX Version 3.2 system.

Related Publications

The following publications contain additional information related to the installation and management of AIX Version 4.3:

- System Release Bulletin (SRB)
- *AIX 4.3 System Management Guide: Operating System and Devices*, order number 86 A2 99HX
- *AIX 4.3 System Management Guide: Communications and Networks*, order number 86 A2 31JX
- *AIX 4.2 Network Installation Management Guide and Reference*, order number 86 A2 12AT
- *AIX 4.3 Network Installation Management Guide and Reference*, order number 86 A2 17HX
- *AIX Commands Reference* (six volumes), order number 86 A2 38JX to 86 A2 43JX
- *AIX Version 4.3 Problem Solving Guide and Reference*, order number 86 A2 32JX
- *AIX Files Reference*, order number 86 A2 79AP
- *AIX Messages Guide and Reference*, order number 86 A2 33JX
- *AIX General Programming Concepts: Writing and Debugging Programs*, order number 86 A2 34JX

Other useful publications:

- *AIX and Related Products Documentation Overview*, order number 86 A2 71WE
- *AIX 4.3 System User's Guide: Operating System and Devices*, order number 86 A2 97HX
- *AIX 4.3 System User's Guide: Communications and Networks*, order number 86 A2 98HX
- *AIX 4.3 Quick Beginnings*, order number 86 A2 75HX
- *AIX Quick Reference*, order number 86 A2 55AP
- *Common Diagnostics Information Manual for MCA Systems*, order number 86 A2 75AT

Ordering Publications

You can order publications from your sales representative or from your point of sale. To order additional copies of this book, use order number 86 A2 43GX. Use *AIX and Related Products Documentation Overview* for information on related publications and how to obtain them.

Contents

Chapter 1. Determining Your Starting Point

This installation guide assumes that all of the required hardware is already installed on your system. The procedures in this guide identify prerequisite tasks or conditions that must be met before performing the procedures.

This chapter helps you determine how to proceed in completing installation tasks. Installation conditions are listed, followed by the chapters you need to consult. You may want to use procedures in chapters other than those in the following list. This chapter suggests a minimal path through the *Installation Guide*.

This chapter includes:

Using the System Release Bulletin (SRB)

Before installing a software on your system, we recommend you to carefully read the System Release Bulletin (SRB) that comes with the software media.

The SRB provides release-specific information and instructions related to software installation. It also contains information it is important to be aware of, such as known limitations or special operational notes.

The SRB for AIX also contains information and instructions for added software contained on the *Bull Enhancements CD-ROM*.

Installing BOS on a New Machine

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

1. Go to Installing BOS from CD–ROM or Tape, on page 2-1 .
2. Continue with Customizing Your Installation, on page 3-1 .

Upgrading to AIX Version 4.3

If you are installing AIX Version 4.3 on a machine that has AIX already installed, follow these steps:

1. Back up your system.
   a. To back up an AIX Version 3.1 system, follow the instructions in the *Installation Guide for Version 3*.
   b. To back up an AIX Version 3.2.x system, follow the instructions in the *AIX Version 3.2.x Installation Guide*.
   c. To back up an AIX Version 4.1 system, follow the instructions in the *AIX Version 4.1 Installation Guide*.
   d. To back up an AIX Version 4.2.f, follow the instructions in the AIX Version 4.2.f *Installation Guide*.
2. Go to Installing BOS from CD–ROM or Tape, on page 2-1 .
3. Go to Customizing Your Installation, on page 3-1 .

Customizing Your Pre–installed System

Your system is normally pre–installed on the delivery. After starting your system, go to ”Customizing Your Installation” on page 3-1

Installing Optional Software

If you have already installed AIX Version 4.3 and you only want to install optional software products or service updates, go to Installing Optional Software and Service Updates, on page 6-1 to install either bundles of software or individual software packages and filesets.

You may also need to perform some of the tasks described in Maintaining Optional Software, on page 8-1 . For detailed information about software packaging and software installation functions, refer to Optional Software Installation and Update Concepts, on page A-1 .

Customizing the BOS Install Program

If you have already installed a machine with AIX Version 4.3 and you want to customize the **bosinst.data** file to set installation parameters for installing other machines, follow these steps:

1. Go to Customizing the BOS Install Program.
2. Back up the machines you want to install with customized installation parameters.
3. Go to Customizing Your Installation if the installed system requires further configuration.

Installing BOS from a System Backup

If you are installing from a backup image you made of your system, follow these steps:

1. Go to Installing BOS from a System Backup, on page 5-1 .
2. Go to Customizing Your Installation, on page 3-1 if the installed system requires further configuration.

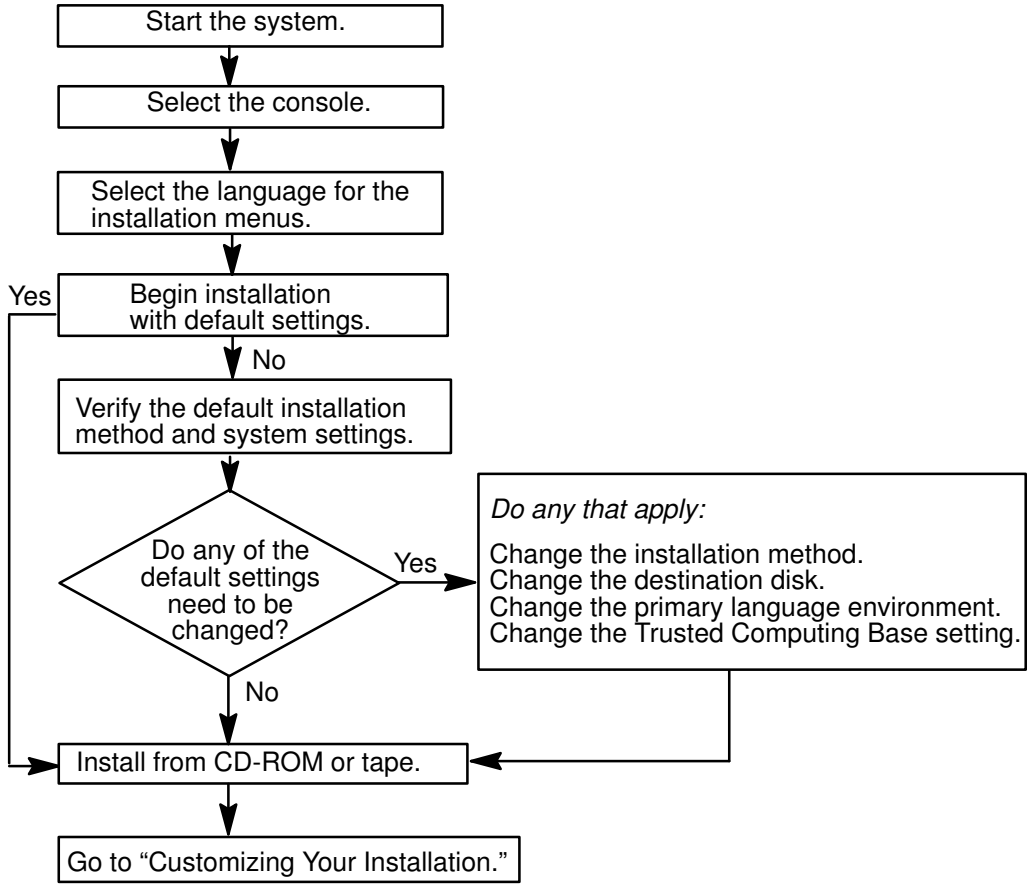
Chapter 2. Installing BOS from CD–ROM or Tape

This chapter describes the installation methods and procedures for installing AIX Version 4.3 of the Base Operating System (BOS) from CD–ROM or tape.

This chapter includes the following sections:

Flowchart for BOS Installation from CD–ROM or Tape

This flowchart outlines the steps required to install BOS from CD–ROM or tape.



Installing the Base Operating System

The basic steps for installing the Base Operating System are summarized below. Detailed procedures for performing these steps are included in this chapter. The procedures in this chapter contain illustrations of the online screens used during installation. These illustrations are provided as examples only. The actual online screens may be somewhat different in appearance.

1. Prerequisites, on page 2-3
2. Start the System, on page 2-4
3. Verify the Default Installation and System Settings, on page 2-9
4. Installing BOS Using the Web–Based System Manager, on page 2-10
5. Change the Installation Method (Preservation and Migration Installations Only), on page 2-10 (if needed)
6. Change the Destination Disk, on page 2-14 (if needed)
7. Change the Primary Language Environment, on page 2-16 (if needed)
8. Change the Trusted Computing Base Setting, on page 2-17 (if needed)
9. Install from CD–ROM or Tape, on page 2-7

Press the Reset button on the system unit if you need to cancel the installation once it is in progress. If you cancel an installation, you must start from the beginning of the installation process to continue installing the system.

Prerequisites

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

- All hardware must already be connected, including any external devices, such as tape and CD–ROM drives. If you need instructions, refer to the hardware documentation that accompanied your system.
- Obtain the system key for the lock (if present) on your system unit.
- Locate your installation CD–ROMs or tapes. If you are installing from CD–ROM, you should have two volumes. You may have multiple volumes of CD–ROMs or tapes.
- If you need to determine whether a display adapter is installed, consult the documents shipped with the system. These documents contain a list of the factory hardware that came with your system.
- Refer to the documentation that came with the product installation media if you have not already done so.
- If other users have access to your system, make sure they are logged off before you begin the installation.
- For AIX Version 4.3, memory requirements have been increased to 32MB. A system with less than 32MB of memory may not be able to boot from the installation media.
- For disk space requirements for AIX Version 4.3, see the *System Release Bulletin* (SRB).
- If AIX Version 3.2 is currently installed and you want to use the Migration Installation method to install AIX Version 4.3, ensure that the root user has a primary authentication method of **SYSTEM**. To check the value, enter:

  ```
  lsuser -a auth1 root
  ```

  To change the value, enter:

```
chuser auth1=SYSTEM root
```

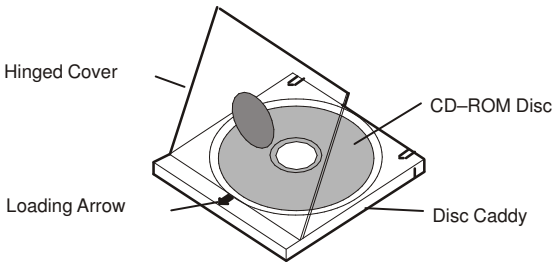
For information about the Migration Installation method, see the section titled Change the Installation Method (Preservation and Migration Installations Only).

- If the system you are installing is currently running, create or locate a backup of the system:
  - If AIX Version 3.1 is currently installed, refer to the AIX Version 3.1 *Installation Guide for Version 3* for instructions on how to create a backup copy of your AIX Version 3.1. After you have created a backup of your system, continue with To Start the System.
  - If AIX Version 3.2 is currently installed, refer to the AIX Version 3.2 *Installation Guide* for instructions on how to create a backup copy of your AIX Version 3.2. After you have created a backup of your system, continue with To Start the System.
  - If AIX Version 4.1 is currently installed, refer to the *AIX 4.1 Installation Guide* for instructions on how to create a backup copy of your AIX Version 4.1. After you have created a backup of your system, continue with Start the System.
  - If AIX Version 4.2.f is currently installed, refer to the *AIX 4.2 Installation Guide* for instructions on how to create a backup copy of your operating system. After you have created a backup copy, continue with Start the System.
  - If you are reinstalling AIX Version 4.3, refer to Backing Up Your System, on page 9-1 . After you have created a backup of your system, continue with Start the System.
  - If AIX Version 4.3 is currently installed on your system, refer to Backing Up Your System, on page 9-1 for instructions on how to create a copy of your AIX Version 4.3.3 system. After you have created a backup of your system, you may continue with Start the System, or you may use the Web-based System Manager to reinstall your system. Refer to Installing the Base Operating System (BOS) with the Web-based System Manager for more information on this procedure.
- If the system you are installing will communicate with other systems and access their resources, determine the following information: network interface, IP address, hostname, and route to the network. Contact your system administrator for the correct information for your system.

Start the System

If your system is currently running, refer to Installing the Base Operating System (BOS) with the Web-based System Manager to install the operating system using the Web-based System Manager. If you do not wish to use this procedure, continue with the following steps:

1. If you have a new system or your system is turned off, skip to step 2. If the system is already turned on, do the following to insert the installation media into the appropriate drive and then shut down the system:
   a. Log in as root user.
   b. Insert Volume 1 of the installation media into the tape or CD–ROM drive. Some CD–ROM drives have a removable disc caddy, while others have a sliding drawer. If the CD–ROM drive on your system does not have a sliding drawer, insert the CD–ROM into the disc caddy and then insert the caddy into the CD–ROM drive.



c. Enter the following command:

```
shutdown -F
```

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

Note: On some models, the **shutdown** command turns off the power to the system unit. It does not, however, automatically flip the power switch to the Off (`0`) position.

d. Flip the system unit power switch to the Off (`0`) position when the shutdown process is complete.

2. Turn the system key (if present) to the Service position.
3. Turn on all attached external devices, such as terminals, CD–ROM drives, tape drives, monitors, and external disk drives. Do not turn the system unit on until step 6. Turning on the external devices first is necessary so that the system unit can identify them during the startup (boot) process.
4. If you have not already inserted the installation media into the tape or CD–ROM drive, do so now.

   Notes:

   – You may find that on specific hardware, the tape drive door will not open while the system unit is turned off. If you have trouble opening the tape drive door during installation, use the following procedure:

     a. Turn the system unit on.

     b. Insert the AIX Version 4.3 installation tape (insert Volume 1 if you received more than one volume).

     c. Turn the system unit off and wait for 30 seconds.

   – On some models that have a door to the tape drive, there may be a waiting period of up to three minutes before the tape drive door opens after you have pressed the button to open the tape drive. Some models also require that the button for the tape drive door be held in the depressed position for a few seconds before the tape drive door will open.

   – On some models, the eject button must be pressed for at least 2 seconds in order to eject a CD–ROM that is already in the disc caddy.

5. If you are not using an ASCII terminal, skip to step 6. If you are using an ASCII terminal, set the communications options as follows:

   – Line Speed (baud rate) = 9600

   – Word Length (bits per character) = 8

   – Parity = no (none)

   – Number of Stop Bits = 1

   – Interface = RS–232C (or RS–422A)

   – Line Control = IPRTS

   Set the keyboard and display options as follows:

   – 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

Note: If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the on–screen instructions to set these options. If you are using some other ASCII terminal, refer to the appropriate documents for information about how to set these options. Some terminals have different option names and settings than those listed here.

6. Turn the system unit power switch from Off (`0`) to On (`|`). The system begins booting from the installation media. If your system is booting from tape, it is normal for the tape to move back and forth. The three–digit LED should display `c31` after several minutes.

   Note: Booting from Open Firmware

   On system units using Open Firmware, the boot phase is conditioned by the `auto-boot?` varaible. This variable is configured in the system unit environment, see the *Maintenance and Service Guide* on the system unit.

   - If `auto-boot? = true` the sytem boots automatically.
   - If `auto-boot? = false` the Open Firmware prompt (ok) is called. Enter:

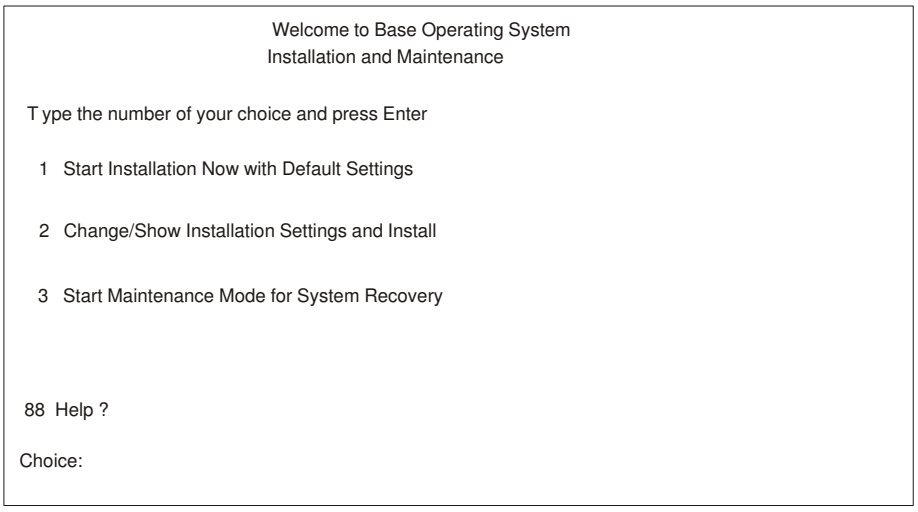
   `'boot cdrom'`

   or, `'boot tape'`

   or, `'boot disk'`

   If you have more than one console, each terminal and direct–attached display device (or console) may display a screen that directs you to press a key to identify your system console. A different key is specified for each terminal displaying this screen. If this screen is displayed, then press the specified key on the device to be used as the system console. The system console is the keyboard and display device used for installation and system administration. Press a key on only one console.

7. A screen is displayed that prompts you to select an installation language. Follow the directions on this screen to select the language in which the installation instructions will be displayed.
8. The Welcome to the Base Operating System Installation and Maintenance screen is displayed.



– To begin the installation immediately, type `1` and press **Enter**.

  After prompting for confirmation, the Installation process begins. Continue with the next section, Install from CD–ROM or Tape.

– To confirm or change the installation and system settings that have been set for this machine, type `2` and press **Enter**.

  The Installation and Settings screen is displayed. Continue with Verify the Default Installation and System Settings. , on page 2-9

You can select `88` to display help on this or any subsequent installation screen.

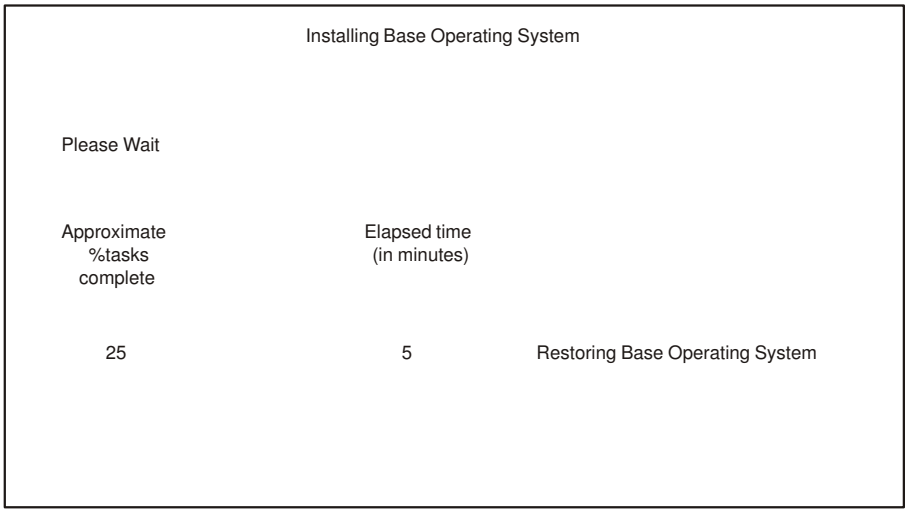
Install from CD–ROM or Tape

If you chose to confirm or change installation and system settings, enter `0` on the Installation and Settings menu to begin the installation process.

If the system key is present and is not already in the Normal position, turn the system key to the Normal position when you are prompted with the message:

```
Turn the system key to the NORMAL position.
```

The Installing Base Operating System screen is displayed.



If you select Migration Installation, after a few minutes, the Migration Confirmation screen is displayed.

Note: To skip the Migration Confirmation screen, press **Enter** when the Installing Base Operating System screen displays.

The Migration Confirmation screen enables you to do the following:

- List the software on your system that is incompatible with AIX Version 4.3 and that will be installed at the new level.
- Reboot the system without completing the migration. This selection cancels the installation.
- Continue with the installation.

After you enter a selection from the Migration Confirmation screen, the installation status screen is redisplayed.

As the installation progresses, the numbers in the Approximate percent 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. After the installation is complete, the system automatically reboots.

Where Do I Go Next?

The type of install you are doing and the type of media you are installing from determines what you do next:

- If you are installing from tape and you are doing either a preservation install or a complete–overwrite install:

  Go to Customizing Your Installation, on page 3-1 and complete the post–installation tasks.

- If you are installing from tape and you are doing a migration install:

  Go to Customizing Your Installation, on page 3-1 and complete the post–installation tasks. If you received multiple tape volumes, the system prompts you to insert the next tape to complete the migration install for software you have installed on your system.

- If you are installing from CD–ROM and you are doing either a preservation install or a complete–overwrite install:

  Go to Customizing Your Installation, on page 3-1 and complete the post–installation tasks. After you complete the post–installation tasks, refer to Installing Optional Software and Service Updates, on page 6-1 for instructions on installing additional software on the current CD–ROM volume and on any other CD–ROM volumes that you may have.

- If you are installing from CD–ROM and you are doing a migration install:

  Go to Customizing Your Installation, on page 3-1 and complete the post–installation tasks. If you have multiple CD–ROMs to install, complete the post–installation tasks after installing Volume 1 of the CD–ROM.

  If you have a graphical system, you can complete the migration installation by selecting the option **Update installed software after a migration installation** on the post–installation program, Configuration Assistant.

  If you have an ASCII system, complete the migration install for software you have installed on your system that is shipped on the second volume of the CD–ROM. Insert Volume 2 and enter the following command:

  ```
  smit update_all
  ```

  Refer to Installing Optional Software and Service Updates, on page 6-1 for more information.

Verify the Default Installation and System Settings

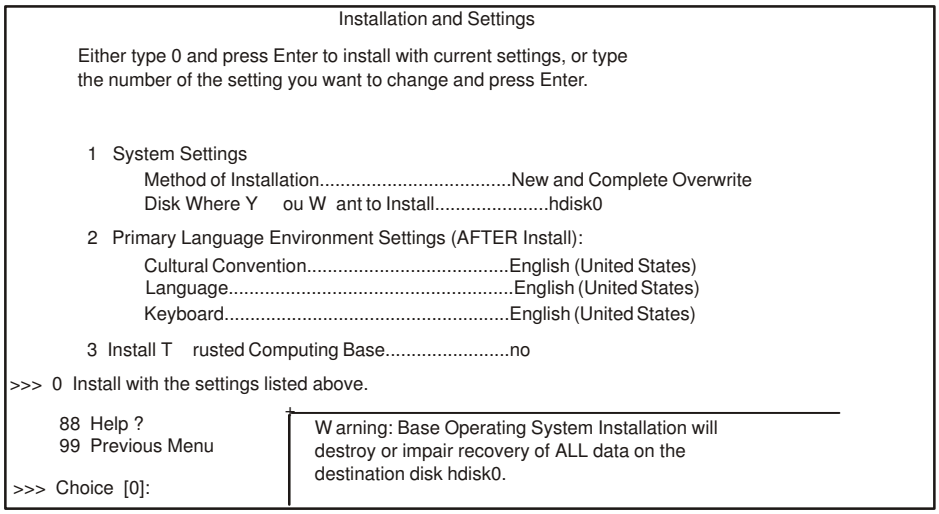
The Installation and Settings screen displays the default installation settings for your machine. The default settings are determined by the state of your system. For example, the default installation method for a new machine is different from the default installation method for a machine that has an earlier version of AIX installed. Usually, you can use the default settings for your installation.

If you want to change the default installation method, be sure to read Change the Installation Method (Preservation and Migration Installations Only), on page 2-10 .

The default installation method is based on the following:

New and Complete Overwrite	This is the only possible installation method for a new machine.
Preservation Install	This is the default setting for a machine installed with VERSION 4.3.
Migration Install	This is the default setting for a machine installed with AIX Version 4.1 or AIX Version 4.2.f.

The default settings for a new machine with a standard U.S. keyboard are shown in the following screen.



Attention: Do *not* select the **0** option on the Installation and Settings screen until you have either verified the default settings or changed them to the correct settings. Selecting **0** on this screen begins the installation process.

To verify the default installation settings, check the default settings on the Installation and Settings screen.

- If the default settings do not need to be changed, type `0` and press **Enter** to confirm that these settings are correct. Skip the rest of this procedure and go to Install From CD–ROM or Tape , on page 2-7 .
- If the default settings need to be changed, continue with one of the following:
  - Change the Installation Method (Preservation and Migration Installations Only), on page 2-10 .
  - Change the Destination Disk, on page 2-14 .
  - Change the Primary Language Environment, on page 2-16 .
  - Change the Trusted Computing Base Setting, on page 2-17 .

Installing the Base Operating System (BOS) with the Web-based System Manager

1. Launch the Web–based System Manager by typing the following on the command line as root user:

   ```
   /usr/websm/bin/wsminstall
   ```

2. When the Software container is displayed, select the Reinstall Base Operating SystemTaskGuide.
3. At the next panel, choose the installation device:
   - Network

     If you choose this option, your machine must either be a configured NIM client, or have access to a NIM environment. If your machine is not a NIM client, the Reinstall Base Operating System TaskGuide will lead you through the process step by step. For more information on setting up a NIM environment, see Basic NIM Operations and Configuration in the *AIX 4.3 Network Installation Management Guide and Reference*.
   - Tape or CD–ROM
4. After choosing the installation device, choose from the following installation types:
   - Overwrite the existing system
   - Install a system backup image (mksysb)
   - Preserve /home and user logical volumes
   - Migrate to a newer version or release
5. Follow the TaskGuide prompts to complete the procedure.

Change the Installation Method (Preservation and Migration Installations Only)

This section describes the different installation methods and the procedure for changing the default setting in a preservation or migration installation of AIX Version 4.3. These methods include:

- New and Complete Overwrite Installation
- Migration Installation
- Preservation Installation

If you want only to go to the next maintenance level of AIX, see Install Optional Software and Service Updates, on page 6-5 . Or, you can use **smit update_all** to update the filesets currently installed.

The following terms are used in this section:

TERM	DEFINITION
Volume Group	A single hard disk or group of hard disks on your system.
rootvg (Root Volume Group)	A volume group containing the Base Operating System.
/usr	A file system containing files and programs that can be shared among machines. Some of the directories included in the /**usr** file system are: /**usr**/**bin**, which contains ordinary commands and shell scripts; /**usr**/**lib**, which contains architecture–independent libraries; /**usr**/**lpp**, which contains optionally installed software.

TERM	DEFINITION
/tmp	A file system providing a temporary shared storage location for files.
/var	A file system containing files that are variable on a per–client basis, such as spool and mail files.
/	The root file system contains files that have machine–specific configuration data.

New and Complete Overwrite Installation.

Use this method if:

- You have a new machine. In this case the hard disk or disks on which you are installing BOS are *empty*. This is the only possible installation method for a new machine.
- You want to completely overwrite an existing version of BOS that is installed on your system. Be sure to back up your system before doing a New and Complete Overwrite installation. You may want to use the New and Complete Overwrite installation when:
  - 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 reassign your hard disks. For example, assume you have four hard disks belonging to one root volume group, and you want to separate these disks into two volume groups. You might first do a Complete Overwrite installation and select the first disk as the installation destination. This disk would become the new root volume group. You could then use either the Volumes application or the System Management Interface Tool (SMIT) to combine the remaining disks into a second (nonroot) volume group. The result would be two separate volume groups. All of the operating system files would be in the root volume group, and you could store user data in the second volume group. The advantage is that you can update or reinstall the operating system without affecting the user's data.

  Attention: The New and Complete Overwrite installation overwrites all data on the selected destination disk. This means that after the installation is complete, you will have to manually configure your system using the Configuration Assistant application, SMIT, or the command line. If you want to preserve your system configuration and you do *not* need to completely overwrite your root volume group, do *not* use Complete Overwrite. Instead, use the Migration installation. (The Migration installation is only available only for AIX Version 3.2, AIX Version 4.1 or AIX Version 4.2.f machines.)

Migration Installation

Use this installation method to upgrade AIX Version 3.2, AIX Version 4.1 or AIX Version 4.2.f to AIX Version 4.3, while preserving the existing root volume group. This method preserves all file systems except **/tmp**, as well as the root volume group, logical volumes and system configuration files. Migration is the default installation method for AIX Version 3.2, AIX Version 4.1 and AIX Version 4.2.f machines.

During a Migration installation, the installation process determines which optional software products must be installed on the AIX Version 3.2, AIX Version 4.1, AIX Version 4.2.f, or AIX Version 4.3 software that exists on the system. Components from previous releases that have been replaced by new software in AIX Version 4.3 are installed at the AIX Version 4.3 level. When migrating from AIX Version 3.2, all files in **/usr/lib/drivers**, **/usr/lib/microcode**, **/usr/lib/methods** and **/dev** are removed from the system, so software support for non–device drivers must be reinstalled. Non–software products remain on the system. They are expected to function if they conform to the binary compatibility conditions described in Compatibility between AIX Version 3.2 and AIX Version 4.3, on page C-1 .

When migrating from AIX Version 3.2, the following software products are removed from the system:

- AIXwindows Interface Composer
- Remote Customer Services
- AIXwindows Development Environment
- Display PostScript functionality from AIXwindows Run–Time Environment Extensions
- Performance Tools functionality from Extended Commands
- OpenGL and graPHIGS

In most cases, user configuration files from the previous version of a product are saved when the new version is installed during a Migration installation.

At the beginning of a migration install, the system verifies that there will be enough space to attempt the migration. If there is not, a message is printed explaining how much extra space is needed.

At this point, you must reboot the machine from the AIX Version 3.2, AIX Version 4.1, or AIX Version 4.2.f disk and make some space available in the **rootvg** volume group to do the migration.

The following is a list of some actions you might take in this situation:

1. Add another disk to the **rootvg** volume group using either the SMIT **smit extendvg** fast path or the **extendvg** command.
2. Move any user data logical volumes from the **rootvg** volume group to another volume group. You can use either the SMIT **smit migratepv** fast path or the **migratepv** command to move individual logical volumes to another volume group's disk. It is a good idea to have only system logical volumes in the **rootvg**, and user data logical volumes in other volume groups.

   For more detailed information about manipulating logical volumes and volume groups, refer to Logical Volumes in *AIX 4.3 System Management Guide: Operating System and Devices*.
3. Remove unneeded logical volumes (and file systems) from the **rootvg**. Run the `lsvg -l rootvg` command to see all the logical volumes in the **rootvg** volume group. The only logical volumes that must be in the **rootvg** are: hd2, hd3, hd4, hd5, hd6, hd8, and hd9var. The hd1 (/**home**) logical volume can reside in another volume group if necessary.

   The hd7 (system dump) logical volume is no longer needed in AIX Version 4 because the paging space logical volume (`hd6`) is used. The migration code automatically removes this logical volume if space is needed, but you can remove it ahead of time with the following commands:

   ```
   sysdumpdev -P -p /dev/hd6  rmlv -f hd7
   ```

4. If you cannot find extra space in your **rootvg**, you may have to do a *preservation* install instead of a migration install to AIX Version 4.3. A preservation install will save all the "non–system" logical volumes and file systems (for example, /**home**), but will remove and recreate the following logical volumes: hd2, hd3, hd4, hd5 and hd9var.

   If you do a preservation install, you must reinstall any applications that were installed in your **rootvg** after the preservation install has completed. You must also reconfigure devices, as well as recreate users and groups. See Preservation Installation, on page 2-13 for more information on this type of installation.

After you have freed up enough space, reboot from your installation media, and try the Migration Installation again.

To complete the Migration Installation, you must have at least 8MB of free disk space. If there is insufficient space to complete the Migration Installation during the BOS installation process, a message similar to the following is displayed at the end of the installation:

```
An error occurred while migrating packages.
Some packages have not been installed.
Please see /var/adm/ras/devinst.log for details or perform an
overwrite or preservation install.
```

If space limitations prevent the migration of all software that is usually automatically migrated, the installation program attempts to install the software that is usually installed for a Preservation of Overwrite installation. If there is still not enough disk space available, the minimum set of software required to support the use of the system is installed.

If there is not enough space to migrate all of the usually migrated software, a collection of software called a Migration Bundle will be available when you install additional software later. If the minimum set of software is installed, or if the installation is not performed from a graphics console, a Graphics_Startup Bundle is created. Before installing either of these bundles, you will need to create additional disk space on the machine you want to install. Refer to Installing Optional Software and Service Updates, on page 6-1 for more information about installing software bundles and for information on migrating or installing optional software products. Maintaining Optional Software, on page 8-1 describes how to remove software from the system to free up disk space.

Preservation Installation

Use this installation method when a version of BOS is installed on your system and you want to preserve the user data in the root volume group. However, this method overwrites the /**usr**, /**tmp**, /**var**, and / (root) file systems by default, so any user data in these directories is lost. These file systems are removed and recreated, so any other LPPs or filesets that you installed on the system will also be lost. Think of a preservation install as an overwrite installation for these flle systems. System configuration must be done after doing a Preservation installation.

The /**etc**/**preserve.list** file contains a list of system files to be copied and saved during a preservation BOS installation. The /**etc**/**filesystems** file is listed by default. Add the full path names of any additional files that you want to save during the Preservation Installation to the **preserve.list** file. You must create the /**etc**/**preserve.list** file on a AIX Version 3.1 machine. On a AIX Version 4.1 or later system, edit the file that exists on your system.

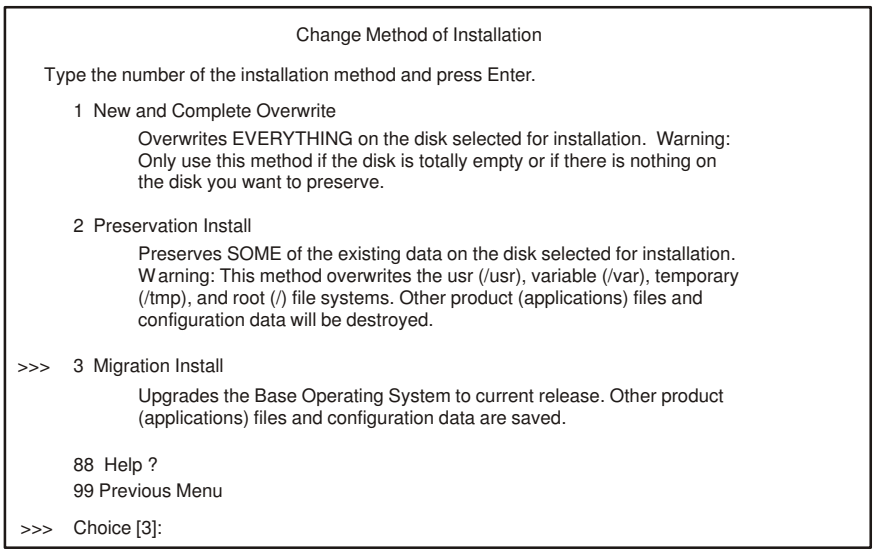
You can modify the **preserve.list** file and copy it to a diskette to be used during BOS installation. For information about creating a supplemental diskette, see Customizing the BOS Install Program, on page 4-1 . If a **preserve.list** file exists on diskette, the installation program uses this information instead of the default file on the installation media or a user–created file on the system you are installing. If no diskette data exists, the installation program uses the **preserve.list** file you created on the system you are installing. Lastly, the program uses the **preserve.list** file on the installation media if no other file is found.

In addition to the amount of disk space required for BOS installation, be sure you have sufficient disk space in the /**tmp** file system to store the files listed in the /**etc**/**preserve.list** file.

Change the Installation Method

Use the following procedure to change the default installation method if your default installation method is either the Preservation or the Migration installation. If your default installation method is New or Complete Overwrite, then this installation method cannot be changed.

1. Enter `1` to select the `System Settings` option. The Change Method of Installation screen is displayed.



2. Enter the number indicating the installation method you want to use. The Change Disks Where You Want to Install screen is displayed.

   If you need to change the default installation disk, continue with Change the Destination Disk. Otherwise, return to the Installation and Settings screen by pressing **Enter** and continue with one of the following:

   – Change the Primary Language Environment, on page 2-16
   – Change the Trusted Computing Base Setting, on page 2-17
   – Install from CD–ROM or Tape, on page 2-7

Change the Destination Disk

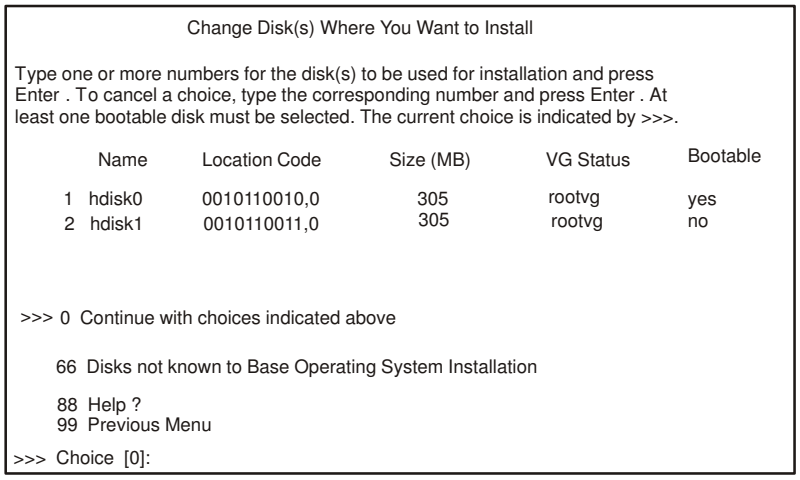
The Change Disks Where You Want to Install screen allows you to change the hard disk where BOS will be installed. The location codes of the hard disks are displayed in the Location Code column of the Change Disks Where You Want to Install screen. The format for the location code for a direct–attached disk is: *AA–BB* where *AA* is 00 (zero) and *BB* is the slot number for the hard disk. The format for the location codes for all other hard disks is described in the system unit documentation.

Note: You may wish to keep a record of the location code for the destination disk. In the future, you can use this location code to identify which disk contains the root volume group in order to do system maintenance.

For a New or Complete Overwrite Installation

Use the following procedure to change the destination disk when performing a new or Complete Overwrite installation:

1. If necessary, enter option `1` to select `System Settings` on the Installation and Settings screen. The Change Disk(s) Where You Want to Install screen is displayed.



2. Type the number, but DO NOT press **Enter**, for each disk you choose. Type the number of a selected disk to deselect it. You can select more than one disk.

   You can also specify a supplemental disk by entering `66` (type `66` and press the **Enter** key) 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. A supplemental device diskette is only needed when the device will not configure with the generic SCSI or bus attached device drivers. BOS installation configures the system for the disk and then returns to the Change Disk(s) Where You Want to Install screen.

3. Press the Enter key when you finish selecting disks.

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 .`

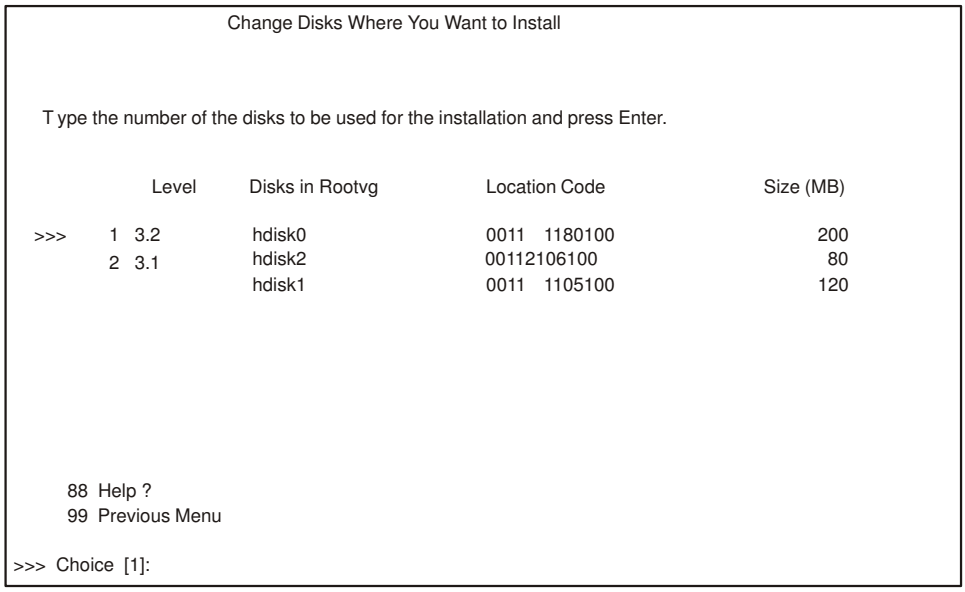
Continue with one of the following:

- Change the Primary Language Environment, on page 2-16
- Change the Trusted Computing Base Setting, on page 2-17
- Install from CD–ROM or Tape, on page 2-7

For a Preservation or Migration Installation

Use the following procedure to change the destination disk or root volume group when installing AIX Version 4.3 on a AIX Version 3.1, AIX Version 3.2, AIX Version 4.1 or AIX Version 4.2.f machine.

1. If necessary, display the Change Disks Where You Want to Install screen by doing the following:



- If the Installation and Settings screen is displayed, then enter option `1` to select the `System Settings` option.
- If the Change Method of Installation screen is displayed, then either select an installation method or keep the default method and press **Enter**.

2. Enter the number indicating the root volume group where you want to install AIX Version 4.3 on the Change Disks Where You Want to Install screen. After you have selected a root volume group, the Installation and Settings screen is displayed.

   Attention: It is extremely important to select the correct root volume group because some of the existing data in the destination root volume group will be destroyed during BOS installation.

Continue with one of the following:

- Change the Primary Language Environment, on page 2-16
- Change the Trusted Computing Base Setting, on page 2-17
- Install from CD–ROM or Tape, on page 2-7

Change the Primary Language Environment

The Set Primary Language Environment screen allows you to change the language environment used to display text and messages after 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.

Note: Changes to the primary language environment do not take effect until after BOS is installed and your system is rebooted. The Latin–1 countries (U.S., Canada, Western Europe) and Japan are supported by two code sets. The default code set for the Latin–1 countries is ISO8859–1, and for Japan the default code set is IBM–943. For information about changing language environments and code sets after installation, refer to Changing Your Locale in *AIX 4.3 System Management Guide: Operating System and Devices*. This article provides information on identifying language conventions and on using the Web-based System Manager Users application or the System Management Interface Tool (SMIT) to change your language environment and code set after installation.

Use the following procedure to change the language environment:

1. Enter 2 on the Installation and Settings screen to select the **Primary Language Environment Settings** option. 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 (Unisted 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]:
```

2. View the options listed on the Set Primary Language Environment screen. The full list of options may be displayed on more than one screen. Select the **MORE CHOICES** option to view the next screen. Most of the options are a predefined combination of cultural convention, language, and keyboard. There is, however, an option for defining your own combination of cultural convention, language, and keyboard.
3. Select an option on the Set Primary Language Environment screen.
   - If you selected a predefined option, then the Installation and Settings screen is displayed. Skip the rest of this procedure and continue with one of the following:
     - Change the Trusted Computing Base Setting, on page 2-17
     - Install from CD–ROM or Tape, on page 2-7
   - If you selected the option to define your own combination of cultural convention, language and keyboard, then the Set Primary Cultural Convention screen is displayed.
4. Enter the number indicating the cultural convention required on the Set Primary Cultural Convention screen. The Set Primary Language screen is displayed.
5. Enter the number indicating the primary language required. The program displays the Set Keyboard screen.
6. Enter the number indicating the keyboard attached to the system. The Installation and Settings menu is displayed again, reflecting your changes.
7. Continue with one of the following:
   - Change the Trusted Computing Base Setting, on page 2-17
   - Install from CD–ROM or Tape, on page 2-7

Change the Trusted Computing Base Setting

When you install the Trusted Computing Base (TCB), the trusted path, the trusted shell, and system integrity checking are installed. The trusted path protects your system in case a program is masquerading as the program you want to use. The trusted path tries to ensure that the programs you run are trusted programs.

If you want to enable the TCB setting, you must do so now. You cannot enable the TCB setting late, but you can disable the TCB setting later. When TCB is not installed, installation time is reduced.

To change the setting for installing TCB to **yes**, enter `3` . Entering `3` again changes the setting back to **no**.

Note: When migrating from AIX Version 4.1 or AIX Version 4.2.f, the install menu **TCB** setting is ignored. The **TCB** setting of the installed system will be the same as on the AIX Version 4.1 system.

Continue with Install from CD–ROM or Tape, on page 2-7 .

Chapter 3. Customizing Your Installation

This chapter provides an overview of tasks you may need to perform after installing the Base Operating System (BOS), or after powering on a pre–installed system for the first time. These tasks are:

After installing BOS, the operating system will run with default settings: one user (root), the date and time set for where the system was manufactured, and other very general settings. You probably want to change some or all of these settings. Also, you must provide system and network information if you want to communicate with other systems.

Graphical System

On a system with a graphical interface, the newly installed BOS reboots, and starts the Configuration Assistant. The Configuration Assistant helps you complete the customization tasks. For example, much of the processing on a system uses the date and time–of–day information, requiring the system have the proper date and time set correctly. You also must set up network communications if your system needs to access other systems in a networked environment.

Note: If you want to use the Configuration Assistant, you must have root user authority.

The graphical interface for Configuration Assistant provides step–by–step instructions for completing each customization task. The tasks are presented to you in a logical sequence, and it is helpful to complete all customization tasks before you use your system. When you exit Configuration Assistant, the guide asks you whether you want to start Configuration Assistant again the next time you restart AIX. You are ready to log in to your system after you exit Configuration Assistant. To access Configuration Assistant later, enter the **configassist** fast path:

```
configassist
```

ASCII System

On a system with an ASCII interface, the newly installed BOS reboots and starts Installation Assistant to guide you through completing customization tasks. You must have root user authority to use Installation Assistant. To access Installation Assistant later, enter the following command:

```
install_assist
```

You can also get to the ASCII version from a graphical system by entering the following command:

```
smitty assist
```

Notes:

1. Depending on your system model and software, Configuration Assistant or Installation Assistant might display automatically:
   - before the login prompt, after the installation of the Base Operating System,
   - the first time you power on a pre–installed system

   Or you may need to login as root user into the system and call the program, entering the following command:

   ```
   configassist
   ```

   or

   ```
   install_assist
   ```

2. If your system was installed by a network installation server, Configuration Assistant or Installation Assistant will not display when the BOS installation program completes.

   If your system was installed using a system backup image, or if your BOS installation was customized, or if you selected Migration Installation from AIX Version 4.2.f, Configuration Assistant or Installation Assistant may not display when the BOS installation program completes.

3. In general, neither Configuration Assistant nor Installation Assistant contain the tasks needed to configure your machine as a server. If you need to configure your system to serve a certain resource, refer to the documentation pertaining to that resource.

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

Customization Tasks

Complete all customization tasks that apply to your newly installed system.

Graphical System

Use Configuration Assistant to perform these customization tasks:

- Set the system date and time for your time zone.
- Set a root user account password to restrict access to system resources.
- Check the system storage and paging space (and increase, if necessary) needed to install and use additional software applications.
- Set your system to communicate with other systems and access their resources. Use the worksheets, on page 3-5 to gather information necessary to configure network communications. Contact your system and network administrators for the correct information for your system.

  Note: If you need to configure your machine as an NFS server, refer to NFS Installation and Configuration in *AIX 4.3 System Management Guide: Communications and Networks*.
- Update installed software after a migration installation.
- Configure Web-based System Manager to run in a Web browser (applet mode).
- Exit Configuration Assistant and log on to the system.

ASCII System

Use Installation Assistant to perform these customization tasks:

- Set the system date and time for your time zone.
- Set a root user account password to restrict access to system resources.
- Confirm or change the device you use to install additional software. The device may be a CD–ROM, tape drive, diskette drive, or a local or remote directory.
- Check the system storage and paging space needed to install and use additional software applications.

  Attention: You may not have enough paging space if you terminate Installation Assistant with Task Not Complete.
- Set your system to communicate with other systems and access their resources. Use the worksheets, on page 3-5 to gather information necessary to configure network communications. Contact your system and network administrators for the correct information for your system.
- Change the primary language environment or add a secondary language environment.
- Create user accounts.
- Configure your printer and add print queues for local printers and remote print servers.
- Import any existing volume groups.
- Install additional software and add license passwords, if required, to enable the software to run. If you need to configure the system to serve license passwords, refer to the License Use Management documentation.
- Back up the system.
- Exit Installation Assistant and log in to the system.

Where Do I Go Next?

To learn about late–breaking information that may include information on the configuration process and installed software, you can refer to README files. For information on how to view README files, refer to Viewing README Files, on page 13-1 .

If you are installing from CD–ROM, refer to Installing Optional Software and Service Updates, on page 6-1 for information on installing software from CD–ROM Volume 2.

For more information on installing optional software, refer to Installing Optional Software and Service Updates, on page 6-1 .

TCP/IP Minimum Configuration and Startup Worksheet

System Name:_____
Network Administrator:_____
Date:_____

YOUR SYSTEM:

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

B. Host Name:_____
   Name of your system

C. 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

D. Subnet Mask:_____
   Required if your network uses mask addresses

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

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

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

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

I. Cable Type: (bnc or dix)_____
   Required for Ethernet

Updating the Host List Worksheet

Network Administrator:_____
Date:_____

Complete the following information in the host list worksheet.

Host Name	Internet Address	Aliases	Comments

- 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.

Mounting Remote File Systems Worksheet

System Name:_____
System Administrator:_____
Date:_____

YOUR SYSTEM:

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

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

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

D. **Mount Now**_____ **Add to /etc/filesystems**_____ or **Both**_____
   both makes the file system available each time the system starts

E. **/etc/filesystems** Mount Directory on System Restart: **yes**___ **no**____
   yes makes the file system available each time the system starts

F. Mode for this NFS File System: **read-only**_____ **read-write**_____

Chapter 4. Customizing the BOS Install Program

This chapter describes how to customize subsequent installations once AIX is installed. The steps involve editing the **bosinst.data** file and using it with your installation media.

This chapter includes:

Introduction to Customizing the BOS Install Program

The first time you install AIX, the Base Operating System (BOS) installation program presents menus from which you must choose setup options. This initial installation also automatically starts a post–installation configuration program, either the graphical Configuration Assistant or the ASCII Installation Assistant. Refer to Customizing Your Installation, on page 3-1 for more information about Configuration Assistant and Installation Assistant.

Note: A system with an ASCII interface will automatically start Installation Assistant as its post–installation configuration program.

For subsequent installations, 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 BOS without menus. You can also customize BOS installation to bypass Configuration Assistant or Installation Assistant and start your own configuration script. The **bosinst.data** file can be used 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. Starting with AIX Version 4.3.3 you can use the Web-based System Manager Reinstall Base Operating System TaskGuide to install systems from product media or backup media. This application offers the user the opportunity to customize their install by answering prompts before installation and creates a **bosinst.data** file appropriate for the type of installation wanted.

If you run your own configuration script from a **bosinst.data** file or from the Network Installation Manager (NIM), the environment in place at the time the script is run is a *single–user environment*. This environment is not available as a multi–user environment, and thus, there are limits to what can be run from a configuration script. The actual **/etc/init** is not running, so no process management is taking place. All available memory is not actually available because the RAM file system still exists, so devices that try to pin large amounts of memory to run may fail to configure. In addition, signal handling is not available.

In this environment, it is recommended that the following guidelines be followed for configuration scripts:

- Base devices can be configured, but devices that require daemons or more complex configuration should be started at reboot time by adding the necessary code to the end of the **/etc/firstboot** script.
- Daemons should not be started.
- Items such as NIS configuration, using system resource controller (SRC), and so on, should be done by creating a separate entry in **/etc/inittab** and running a configuration script at reboot time.
- No action should be taken that requires more than 32MB of paging space unless the paging space is implicitly increased.

Notes:

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

2. You can also use the instructions in this chapter to create a supplemental diskette containing a modified **preserve.list** file, which is used during a Preservation Installation. For more information about the **preserve.list** file, see Installation Methods, on page 0 .

The **bosinst.data** file directs the actions of the BOS installation program. The file resides in the /**var**/**adm**/**ras** directory on the installed machine only, and it is not accessible on the commercial tape or the CD–ROM on which you received AIX.

The **bosinst.data** file contains stanzas with variables set to default values. Each variable is on a new line, in the *Variable***=***Value* form. A blank line separates each stanza. The information in these stanzas informs the installation program about such things as the method and 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.

Customizing and Using a bosinst.data File

You must install the Base Operating System (BOS) before you can access and modify the default **bosinst.data** file. The Web-based System Manager **Renstall Base Operating System** TaskGuide can be used to prepare your next installation and in customizing the **bosinst.data** file. This file may also be retrieved and edited like any other ASCII file. If you are editing the **bosinst.data** file, use one of the following procedures:

- Create and Use a Backup Tape
- Create and Use a Client File
- Create and Use a Supplementary Diskette

Refer to bosinst.data File Stanza Descriptions, on page 4-6 and Example bosinst.data Files, on page 4-13 for information about the contents of the file and examples of edited files. You may verify the contents of your modified **bosinst.data** file by using the **bicheck** command.

If you are customizing the /**bosinst.data** file in order to have it become part of a system backup (mksysb), please note that starting with AIX Version 4.3.3, the **mksysb** command always updates the **target_disk_data** stanzas to reflect the current disks in the **rootvg**. If you do not want this update to occur you must create the file /**save_bosinst.data_file**. The existance of this file is checked by the **mksysb** command, before the **target_disk_data** stanzas are updated.

Create and Use a Backup Tape

1. Customize the **bosinst.data** file:
   a. Change your directory, with the **cd** command, to the /**var**/**adm**/**ras** directory.
   b. Copy the /**var**/**adm**/**ras**/**bosinst.data** file to a new name, such as **bosinst.data.orig**. This step preserves the original **bosinst.data** file.
   c. Edit the **bosinst.data** file with an ASCII editor.
   d. Verify the contents of the edited bosinst.data file using the **bicheck** command:

   ```
   /usr/lpp/bosinst/bicheck filename
   ```

   e. Copy the edited file to the root directory:

   ```
   cp /var/adm/ras/bosinst.data /bosinst.data
   ```

   f. If you do not want the target_disk_data file updated to reflect the current **rootvg**, create the file /**save_bosinst.date_file** by using the following command:

   ```
   touch /save_bosinst.data_file
   ```

2. Create a backup image of the system:

   Back up the system, using one of the following: the Web-based System Manager Backups application, the System Management Interface Tool (SMIT), or **mksysb** command. Refer to Backing Up Your System, on page 9-1 for more information.

   BOS installations from this backup will behave according to your customized **bosinst.data** file.

Create and Use a Client File

Create one customized **bosinst.data** file for each client and, using the Network Installation Manager (NIM), define the files as NIM resources. Refer to *AIX 4.3 Network Installation Management Guide and Reference* for more information about how to use the **bosinst.data** file as a resource in network installations.

Create and Use a Supplementary Diskette

This procedure describes how to create the supplementary diskette and use it in future installations:

1. Customize the **bosinst.data** file:
   a. Change your directory, with the **cd** command, to the /**var**/**adm**/**ras** directory.
   b. Copy the /**var**/**adm**/**ras**/**bosinst.data** file to a new name, such as **bosinst.data.orig**. This step preserves the original **bosinst.data** file.
   c. Edit the **bosinst.data** file with an ASCII editor.
   d. Create an ASCII file consisting of one word:

```
data
```

   e. Save the new ASCII file, naming it **signature**.
2. Create the diskette and use it for installation:
   a. Back up the edited **bosinst.data** file and the new **signature** file to diskette with the following command:

```
ls ./bosinst.data ./signature | backup -iqv
```

      OR

      If you create a bundle file named `mybundle` , back up the edited **bosinst.data** file, the new **signature** file, and the bundle file to diskette with the following command:

```
ls ./bosinst.data ./signature ./mybundle | backup -iqv
```

   b. Put the diskette in the diskette drive of the target machine you are installing.
   c. Boot the target machine from the install media (tape, CD–ROM, or network) and install AIX.

      The BOS installation program will use the diskette file, rather than the default **bosinst.data** file shipped with the installation media.

bosinst.data File Stanza Descriptions

This section describes the contents of the **bosinst.data** file. Two example files follow the stanza descriptions.

control_flow Stanza

The control_flow stanza contains variables that control the way the installation program works:

CONSOLE

Specifies the full path name of the device you want to use as the console. This value is blank in the default **bosinst.data** file because the file specifies a prompted installation, which requires you to press a key to identify your console. (Instructions for which key to press are displayed on the screen.) If you change the **PROMPT** variable to **no**, you must specify a console here.

INSTALL_METHOD

Specifies a method of installation: **migrate**, **preserve**, or **overwrite**. The default value is initially blank. The installation program assigns a value, depending on which version of AIX was previously installed. See Installation Methods, on page 0 for more information about installation methods.

The default method of installation is **migrate** if AIX Version 4.1 or 4.2 is on the machine. The default is **preserve** if AIX 3.1 or 4.3 is on the machine. If no AIX exists, the default method is **overwrite**.

PROMPT

Specifies whether the installation program uses menus from which you make choices. The possible values are **yes** (default) and **no**.

Note: You must fill in values for all variables in the locale stanza if you set the **PROMPT** variable to **no**. Similarly, if **PROMPT** equals **no**, you must supply values for all variables in the control_flow stanza, with two exceptions: the **ERROR_EXIT** and **CUSTOMIZATION_FILE** variables, which are optional.

Attention: Fill in values for all variables in the target_disk_data stanza if you set the **PROMPT** variable to **no**. The BOS installation program assigns target disks for blank variables. You can lose data if the install program assigns a disk where you store data.

EXISTING_SYSTEM_OVERWRITE

Confirms that the install program will overwrite existing volume groups. This variable is applicable only for a nonprompted overwrite installation. The possible values are **no** (default), **yes**, and **any**.

no (default)	Only disks that are not part of a volume group can be used for the install.
yes	Disks that contain the root volume group will be used first, and if additional disks are needed for the install, then disks that contain no volume groups will be used.
any	Any disks can be used for the install.

When the installation is nonprompted and the **target_disk_data** stanza is empty, the installation process uses the value of the EXISTING_SYSTEM_OVERWRITE field to determine the disks to install on. An error message will inform you if there are not enough disks matching the criteria needed to complete the install.

INSTALL_X_IF_ADAPTER

Installs AIXwindows. The possible values are:

yes (default)	Install AIXwindows if the selected console is a graphics terminal
no	Do not install AIXwindows
all	Always install AIXwindows.

RUN_STARTUP

Starts the Configuration Assistant on first boot after the BOS installation completes, if the system has a graphical interface. Starts Installation Assistant if the machine has an ASCII interface. The possible values are **yes** (default) and **no**.

RM_INST_ROOTS

Removes all files and directories in the **/usr/lpp/*/inst_roots** directories. The possible values are **no** (default) and **yes**.

The **/usr/lpp/bos/inst_roots** directories must remain if the machine will be used as a network server. You can, to save disk space, set this value to **yes** if the machine will not be a network server.

ERROR_EXIT

Starts an executable program if an error occurs in the installation program. The default value is blank, which signals BOS installation to use a command that is shipped on the installation media. The command starts an error message routine when the installation program halts due to an error. As an alternative to the default, you can enter the path name of your own script or command for a customized error routine.

CUSTOMIZATION_FILE

Specifies the path name of a customization file you create. The default value is blank. The customization file is a script that starts immediately after the installation program concludes.

TCB

Specifies whether you want to install the Trusted Computing Base (TCB). When you install the TCB, the trusted path, the trusted shell, and system integrity checking are installed. The TCB must be installed and initialized when the operating system is installed. The TCB cannot be installed later. By not installing the TCB, installation time is reduced. The possible values are **no** (default) and **yes**.

INSTALL_TYPE

Specifies what software to install on the machine. The values are **full** (full–function configuration), **client** (client configuration), and **personal** (personal workstation configuration). The **full** configuration includes all the software in **client** and **personal**. Change **full** to **client** or **personal** if you want to install one of these subsets of the full–function configuration.

The default setting depends on the software configuration that you purchased. For example, if the installed machine has a full–function (server) configuration, the setting will be **full**. You should not change the default setting.

BUNDLES

Specifies what software bundles to install. Type the full path name of each bundle file. Be sure there is sufficient disk space and paging space on the target machine for the software you specify in the **BUNDLES** variable.

This list of bundle file names is limited to 139 bytes. If your list of bundle file names is longer than 139 bytes, use the **cat** command to combine the bundle files into a single custom bundle file and enter the name of your custom bundle file in this field.

If you are installing from CD–ROM or using a network installation server, specify the full path name of each bundle file as follows:

```
/SPOT/usr/sys/inst.data/sys_bundles/Bundl
eFileName
```

If you are installing from tape, to specify system–defined bundles on the product media, use the full path name of each bundle file as follows:

```
/usr/sys/inst.data/sys_bundles/BundleFile
Name
```

If you are using a **bosinst.data** diskette to define your own bundle files, specify the full path name of each bundle file as follows: `/../` *DirectoryName*`/` *BundleFileName*. For example, if you put a bundle file named `mybundle` in the **root** directory, the full path name would be `/../mybundle`.

If you are using Preservation Installation, create bundle files before you start the installation. Create the files in /**home** and specify the full path name of each bundle file as follows:

```
/home/BundleFileName
```

SWITCH_TO_PRODUCT_TAPE Allows you to boot from a product tape, then switch to a **mksysb** tape to install. You can then switch back to the product tape at the end of the installation if you need to install additional device filesets for support on the target machine. This procedure is usually used for cloning systems. The possible values are **no** (default) and **yes**.

Normally, you would boot from a CD–ROM (to ensure that you have the correct device support and boot image) then tell BOS install to install from the **mksysb** tape. At the end of the install, BOS install automatically verifies that all device support is installed on the system and installs additional device support from the CD–ROM.

If you are booting from a product tape and switching to a **mksysb** tape, BOS install does not automatically assume you want to do cloning and will not prompt you for the product tape again. If you want a prompt for the product tape to verify all the device support is installed, you must set this variable to **yes** in your **bosinst.data** file.

RECOVER_DEVICES Specifies whether to reconfigure the devices. For **mksysb** installs, the ODM configuration database is saved in the image. The device names and attributes are automatically extracted from the database, and the BOS install program attempts to recreate the devices the same way they were on the machine the **mksysb** was created on. This is normally what you would do for regular **mksysb** restores on the same system. However, for cloning, you may not want these devices configured this way, especially for network configuration. The possible values are **yes** (default) and **no** if you do not want device reconfiguration.

BOSINST_DEBUG Specifies whether to show debug output during BOS installation. The value **yes** will send **set –x** debug output to the screen during BOS installation. The possible values are **no** (default) and **yes**.

target_disk_data Stanza

The target_disk_data stanza contains variables for disks in the machine where the program will install BOS. The default **bosinst.data** file has one target_disk_data stanza, but you can add new stanzas to install BOS on multiple disks, one stanza for each disk.

There can be multiple target_disk_data stanzas. They define the disks that will contain the root volume group. Only one field (**PVID**, **CONNECTION**, **LOCATION**, **SIZE_MB**, **HDISKNAME**) must be non–null for BOS install to choose a disk. The order of precedence is **PVID** (Physical Volume ID), then **CONNECTION** (parent attribute//connwhere attribute), then **LOCATION**, then **SIZE_MB**, and then **HDISKNAME**.

- If **PVID** is set, BOS install checks to see if a disk matches the value. If so, other attributes are ignored.
- If **PVID** is empty and **CONNECTION** is set, then BOS install checks to see if the parent and connwhere attributes (separated by "//") match a disk. If they do, other attributes are ignored.
- If either **PVID** or **CONNECTION** is set, and neither value matches a disk on the target system, and no other attributes are set, then an error message is generated, and a disk must be explicitly selected.
- If other attributes are specified, then processing occurs as described below:
  - If **LOCATION** is set, BOS install ignores **SIZE_MB** and **HDISKNAME**.

– If **LOCATION** is not set and **SIZE_MB** is, BOS install selects disks based on **SIZE_MB** and ignores **HDISKNAME**.

– If **LOCATION** and **SIZE_MB** are both empty, BOS install chooses the disk specified in **HDISKNAME**.

– If all fields are empty, BOS install chooses a disk for you.

Attention: If **prompt=no**, do not leave the **target_disk_data** stanzas empty, unless you do not care which disk BOS install overwrites. This is because the algorithm that determines the default disk for the installation is not always predictable.

The **SIZE_MB** field can contain either a size or the word `largest` . If a size is listed, BOS install does a ”best–fit” on the disks. If the word `largest` is in that field, BOS install selects the largest disk. If there is more than one target_disk_data stanza, BOS install selects the two ”largest” disks, and so on.

PVID Specifies the 16–digit physical volume identifier for the disk.

CONNECTION Specifies the combination of the **parent** attribute and the **connwhere** attribute associated with a disk. The parent and connwhere values are separated by two slashes (`//`). If the **parent** value is `scsi0` and the **connwhere** value is `0,1` , then the **CONNECTION** value is `scsi0//0,1` . An example of the **CONNECTION** value for a SSA disk would be `ssar//000629CCC07300D` . In the example, the **parent** attribute is represented by `ssar` and the **ConnectionLocation** (15–character unique identity) of the disk drive `000629CCC07300D` is used for the **connwhere** attribute.

SIZE_MB Specifies the formatted size of the disk, in megabytes, where the program will install BOS. The default value is blank. You can specify the size of your target disk by typing the number of megabytes available on the formatted disk. Also, you can type `largest` if you want to use the largest disk (that has not already been selected) found by the installation program.

LOCATION Specifies a location code for the disk where the program will install BOS. The default value is blank. If you do not specify a value, the installation program assigns a value based on the next two variables. The system unit documentation provides information about the format of location codes.

HDISKNAME Specifies the path name of the target disk. The default value is blank. To name a target disk, use the *hdiskname* format, where *hdiskname* is the device name of your disk (for example, **hdisk0**).

locale Stanza

The locale stanza contains variables for the primary language the installed machine will use. Refer to Understanding Locale in *AIX 4.3 System Management Guide: Operating System and Devices* for a list of languages and the format to use when editing variables.

BOSINST_LANG Specifies the language the installation program uses for prompts, menus, and error messages. The default value is blank.

CULTURAL_CONVENTION Specifies the primary locale to install. The default value is blank.

MESSAGES	Specifies the locale for messages catalogs to install. The default value is blank.
KEYBOARD	Specifies the keyboard map to install. The default value is blank.

dump Stanza

The dump stanza specifies system dump characteristics.

PRIMARY	Specifies the primary dump device to be set by **sysdumpdev –P –p *device***.
SECONDARY	Specifies the secondary dump device to be set by **sysdumpdev –P –s *device***.
COPYDIR	Specifies the directory to which the dump is copied at system boot.
FORCECOPY	Specifies whether the system will boot into menus which allow copy of the dump to external media if the copy fails.
ALWAYS_ALLOW	Specifies whether the key mode switch can be ignored when a dump is requested.

If the stanza is not present in the **bosinst.data** file, then no additional dump device handling occurs beyond what is already in place. Checking on the values of the fields will be limited; if the device specified for a dump device is not valid, then any error processing comes from the **sysdumpdev** command and is sent to the console and stored in the BOS install log.

- If **FORCECOPY** is specified and no **COPYDIR** is specified, then the value field of the autocopydump attribute from **/etc/objrepos/SWservAt** is retrieved and used for the **sysdumpdev –[d|D]** ***copydir*** operation.
- If only the **COPYDIR** is specified without **FORCECOPY** being specified, then **forcecopy** defaults to `yes` . The **sysdumpdev –d** (**FORCECOPY** = no) or **sysdumpdev –D** (**FORCECOPY** = yes) is used to set the copy directory.
- If **ALWAYS_ALLOW=yes**, then run **sysdumpdev –K**. Otherwise, run **sysdumpdev –k**.
- If any values other than `yes` and `no` are specified for **FORCECOPY** or **ALWAYS_ALLOW**, then the default actions occur, and processing continues.
- If no value is specified for a particular dump field, then no analogous **sysdumpdev** operation is performed. This leaves the system values in the appropriate state, even for a migration or system backup image installation. If a **COPYDIR** is specified but **FORCECOPY** is not specified, then the value of the forcecopydump attribute is retrieved from **/etc/objrepos/SWservAt** in order to determine the proper form of **sysdumpdev** to invoke.

Example bosinst.data Files

These example **bosinst.data** files show edits you might make for the following kinds of installations:

- mksysb Backup Restoration
- Nonprompted Installation

The depicted values illustrate formatting only and do not apply to your installation.

mksysb Backup Restoration

```
control_flow:
    CONSOLE=
    INSTALL_METHOD = overwrite
    PROMPT = yes
    EXISTING_SYSTEM_OVERWRITE = yes
    INSTALL_X_IF_ADAPTER = no
    RUN_STARTUP = no
    RM_INST_ROOTS = no
    ERROR_EXIT =
    CUSTOMIZATION_FILE =
    TCB =
    INSTALL_TYPE = full
    BUNDLES =
    SWITCH_TO_PRODUCT_TAPE = no
    RECOVER_DEVICES = yes
    BOSINST_DEBUG = no

target_disk_data:
    LOCATION = 00-00-0S-00
    SIZE_MB =
    HDISKNAME =

target_disk_data:
    LOCATION = 00-00-0S-01
    SIZE_MB =
    HDISKNAME =

locale
    BOSINST_LANG = en_US
    CULTURAL_CONVENTION = en_US
    MESSAGES = en_US
    KEYBOARD = en_US
```

```
control_flow:
    CONSOLE = /dev/lft0
    INSTALL_METHOD = preserve
    PROMPT = no
    EXISTING_SYSTEM_OVERWRITE = yes
    INSTALL_X_IF_ADAPTER = yes
    RUN_STARTUP = yes
    RM_INST_ROOTS = no
    ERROR_EXIT =
    CUSTOMIZATION_FILE =
    TCB =
    INSTALL_TYPE = full
    BUNDLES =
    SWITCH_TO_PRODUCT_TAPE = no
    RECOVER_DEVICES = yes
    BOSINST_DEBUG = no

target_disk_data:
    LOCATION =
    SIZE_MB = largest
    HDISKNAME =

locale
    BOSINST_LANG = da_DK
    CULTURAL_CONVENTION = da_DK
    MESSAGES = C
    KEYBOARD = da_DK
```

Chapter 5. Installing BOS from a System Backup

This chapter describes how to install the Base Operating System (BOS) from a backup image of a previously installed system.

This chapter includes:

Introduction to Backup Installations

You can install a system from a backup image that is stored either on tape, CD, or in a file. This chapter describes the procedure for installing a backup image stored on tape or CD. To install a backup stored in a directory on your network installation server, refer to *AIX 4.3 Network Installation Management Guide and Reference*. Starting with AIX Version 4.3.3 you can perform backup installations by using the Web-based System Manager Reinstall Base Operating System TaskGuide. Refer to Installing the Base Operating System (BOS) from a System Backup Using the Web-based System Manager for more information.

Typical uses for a backup are to:

- Restore a corrupted system.
- Install and configure software on one system, then duplicate that installation on other systems (cloning).

This discussion refers to *source system* and *target system.* The source system is the system from which you created the backup copy; the target system is the system on which you are installing the backup copy.

Installing a system from backup reduces, and often eliminates, repetitive installation and configuration tasks. For example, a backup installation can copy optional software installed on the source system, in addition to the basic operating system. The backup image also transfers many user configuration settings.

An installation from backup operates in either prompted or nonprompted mode, depending on conditions set in the /**bosinst.data** file and on compatibility between the backup image and the installed machine. See Customizing the BOS Installation Program, on page 4-1 for information on how to modify the **bosinst.data** file to preset installation parameters when you create a system backup.

The procedures in this chapter require that system backups be created using AIX Version 4.3. There are several different methods for creating backups to tape or file. These include:

- Using the Web-based System Manager Backups application
- Using the SMIT Back Up This System menu
- Creating the backup from the command line, using the **mksysb –i** *TargetDevice* command. See Backing Up Your System, on page 9-1 for further information.

Beginning with AIX Version 4.3.3, backups can be created on CD's using the following methods:

- Using the Web-based System Manager Backups application (System Backup to CD–R TaskGuide)
- Using the SMIT Back Up This System to CD menu
- Creating the backup from the command line, using the **mkcd** command. See Introduction to Backups on CD , on page 9-11 for more information.

During the installation of the backup, the system checks to see if the target system has enough disk space to create all the logical volumes that are stored on the backup. If there is not enough disk space, the system prompts you to choose more destination hard disks. When file systems are created on the target system, they are the same size as they were on the source.

After the installation completes, the Object Data Manager (ODM) and /**dev** directory on the target system are reconfigured. The installation modifies device attributes for all files beginning with 'Cu' in the /**etc**/**objrepos** directory on the target system. The installation also deletes and recreates all files in the target /**dev** directory.

Setup Considerations

Consider altering passwords and network addresses if you use a backup to make master copies of a source system. Copying passwords from the source to a target system can create security problems. Also, if network addresses are copied to a target system, duplicate addresses can disrupt network communications. See Source and Target Differences , on page 0 for more information.

Use the following techniques if you do not want certain information saved on your target system:

- Use a backup image that was created before the source system was configured with this information.
- Manually modify this information on the target system immediately after installing the backup image.

Cloning Considerations

The mksysb images enable you to clone one system image onto multiple target systems. The target systems might not contain the same hardware devices or adapters, require the same kernel (uniprocessor or microprocessor), or be the same hardware platform (**rs6k**, **rspc**, or **chrp**) as the source system. If you are installing a mksysb on a system it was not created on, use the procedure Cloning Your System.

Beginning with AIX Version 4.3.3, you can create a ”generic” backup CD. This backup image can be installed on any machine running the AIX operating system. Refer to Introduction to Backups on CD for more information.

Cloning Your System

Use this procedure to install a mksysb on a target system it was not created on. Be sure to boot from the product media appropriate for your system and at the same maintenance level of BOS as the installed source system that the mksysb was made on. For example, you can use BOS Version 4.2.1 product media with a mksysb from a BOS Version 4.2.1 system. This procedure is to be used when installing a backup tape to a different system, or if installing a personal CD to a different system. It is not necessary when installing using generic backup CDs.

After booting from product media, complete the following steps when the Welcome to the Base Operating System Installation and Maintenance screen is displayed.

1. Select the **Start Maintenance Mode for System Recovery** option.
2. Select the **Install from a System Backup** option.
3. Select the drive containing the backup tape or CD and insert the media for that device.

   The system reads the media and begins the installation.

   You will be prompted again for the BOS installation language, and the Welcome screen should be displayed. Continue with the Prompted Installation, as cloning is not supported in nonprompted installations.
4. If you are cloning from the product CD to restore a backup tape, do not remove the CD from the CD–ROM drive. If you are restoring from a backup CD, you will be prompted to remove the CD if necessary. You will be prompted again for the BOS install language, and the Welcome screen is displayed. Continue with the Prompted Installation process, as cloning is not supported for Nonprompted Installations.

   Notes:

   a. Booting from tape product media is not supported on some rspc platform systems. When a backup tape is created on one of these systems, the **mksysb** command will display a message indicating that the system does not support tape boot. To determine what your platform system is, enter the following command:

   ```
   bootinfo -p
   ```

   b. If you are cloning from the product tape to restore a backup tape, or if you are cloning from a product CD to restore from a backup CD, create a diskette that contains a **./bosinst.data** file with **SWITCH_TO_PRODUCT_TAPE=yes** in the **control_flow** stanza if this was not set prior to making the mksysb.

   c. If **SWITCH_TO_PRODUCT_TAPE** is set to **yes**, the system will prompt you to remove the mksysb media and insert the product media after the mksysb has been restored.

After the mksysb installation completes, the installation program automatically installs additional devices and the kernel (uniprocessor or microprocessor) on your system using the original product media you booted from. Information is saved in BOS installation log

files. To view BOS installation log files, enter **cd /var/adm/ras** and view the **devinst.log** file in this directory.

If the source system does not have the correct passwords and network information, you may make modifications on the target system now. Also, some products ship device–specific files such as graPHIGS. If your graphics adapter is different on the target system, verify that the device–specific filesets for graphics–related LPPs are installed.

> **Attention:** If the system you have cloned is using OpenGL or graPHIGS, there may be some device filesets from these LPPs that must be installed after a clone. OpenGL and graPHIGS have graphics adapter–specific filesets, so if you cloned onto a system with a different graphics adapter, you will need to create a bundle as follows:

```
echo OpenGL.OpenGL_X.dev >
/usr/sys/inst.data/user_bundles/graphic_dev.bnd

echo PEX_PHIGS.dev >>
/usr/sys/inst.data/user_bundles/graphic_dev.bnd
```

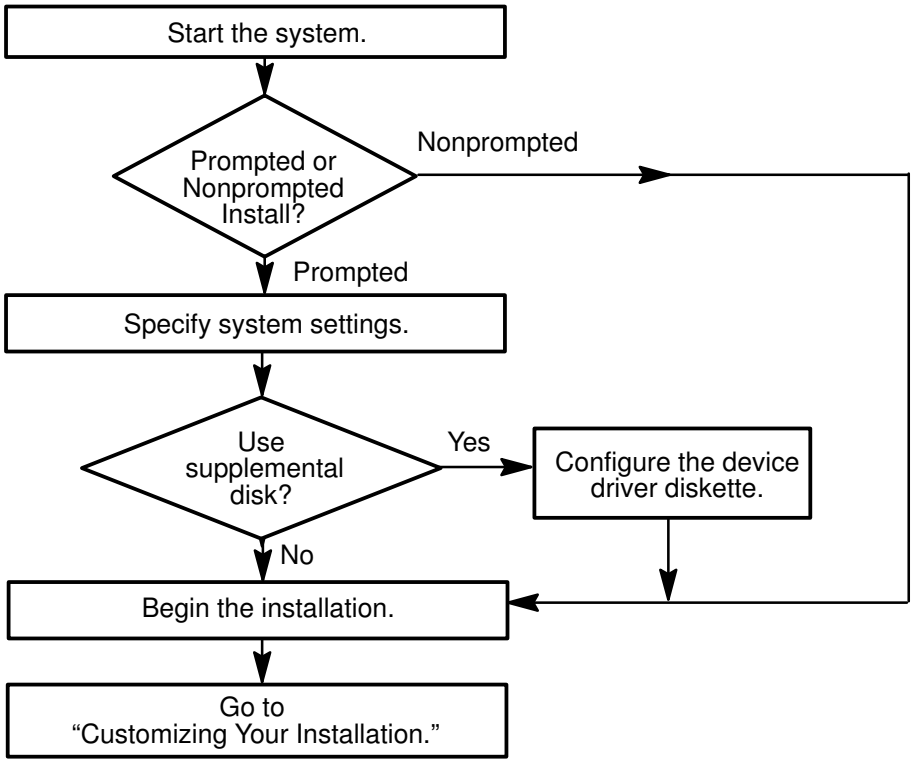
Next use **smitty install_bundle** to install this bundle. If any new filesets are installed, you may want to reboot your system before using OpenGL and graPHIGS. Otherwise, you may experience performance problems with these applications.

The above procedure is required because the OpenGL and graPHIGS LPPs are on a separate media, and therefore the normal cloning procedure cannot automatically install any missing device filesets.

The Network Installation Management (NIM) mksysb installation also supports cloning. If you are using NIM and you have OpenGL and graPHIGS in your **lpp_source**, you can create a separate bundle as described above, and allocate it when you install the mksysb image. The device filesets will be installed automatically.

Flowchart for Backup Installations

The flowchart outlines basic steps to install the Base Operating System (BOS) from backup.



To Install BOS from a System Backup

This section details the procedure for installing BOS from a system backup.

Prerequisites

The following conditions should be met before beginning the procedure:

- All hardware must already be installed, including external devices, such as tape and CD–ROM drives.
- Obtain the system key for the lock (if present) on your system unit.
- Obtain your system backup image:

CD BOS CD's, created in one of the following ways:

- Using the Web-based System Manager Backups application (System Backup to CD–R TaskGuide).
- Using the SMIT Back Up This System to CD menu.
- From the command line, using the **mkcd** command.

Tape BOS tapes, created in one of the following ways:

- Using the Web-based System Manager Backups application.
- Using the SMIT Back Up the System menu (Beginning with AIX Version 4.3.3, use the SMIT Back Up This System to Tape/File menu).
- From the command line, using the **mksysb –i** *Target* command.

Network The path to your backup image file. Refer to *AIX 4.3 Network Installation Management Guide and Reference* for information about installing a backup across a network.

To Start the System

Note: Before you begin, select the tape or CD–ROM drive as the primary boot device. For additional information, refer to the section in your hardware documentation that deals with system management services.

Use this procedure to start your machine:

1. Skip to step 2 if you have a new system or your system is turned off. If the system is already turned on, do the following to put the backup media in the drive and then shut down the system:
   a. Log in as root user.
   b. Put the backup media in the drive.
   c. Enter the following command:

      shutdown –F

      The `Halt completed ...` message appears when the shutdown process completes.

   Note: On some models, the **shutdown** command turns off the power to the system unit. It does not, however, automatically turn the power switch to the Off position.

   d. Power off the system unit when the shutdown process completes.

2. Turn the system key (if present) to the Service position.
3. Turn on all attached external devices, such as terminals, CD–ROM drives, tape drives, monitors, and external disk drives. Do not turn the system unit on until step 4. Turning on the external devices first is necessary so that the system unit can identify them during the startup (boot) process.
4. If you have not already put the backup media in the drive, do so now.

   Notes:

   – You may find that on specific hardware the tape drive door will not open while the system unit is turned off. If you have trouble opening the tape drive door during installation, use the following procedure:

     a. Turn the system unit on.

     b. Put the media in the drive.

     c. Turn the system unit off and wait 30 seconds.

   – On some models that have a door to the tape drive, there may be a waiting period of up to three minutes before the tape drive door opens after you have pressed the button to open the tape drive. Some models also require that the button for the tape drive door be held in the pressed position for a few seconds before the tape drive door will open.
5. If you are not using an ASCII terminal, skip to step 6. If you are using an ASCII terminal, set the communications options as follows:

   – Line Speed (baud rate) = 9600

   – Word Length (bits per character) = 8

   – Parity = no (none)

   – Number of Stop Bits = 1

   – Interface = RS–232C (or RS–422A)

   – Line Control = IPRTS

   Set the keyboard and display options as follows:

   – 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

   Note: If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the on–screen instructions to set these options. If you

are using some other ASCII terminal, refer to the appropriate documents for information about how to set these options. Some terminals have different option names and settings than those listed here.

6. Power on the system unit. The system begins booting from the backup media, which might move back and forth, or the CD–ROM.

   Note: Booting from Open Firmware:

   On system units using Open Firmware, the boot phase is conditionned by the `auto-boot?` variable. This variable is configured in the system unit environment, see the *Maintenance and service guide* of the system unit.

   - If `auto-boot? = true` the system boots automatically.
   - If `auto-boot? = false` the Open Firmware prompt (ok) is called. Enter:

     `'boot cdrom'`

     or, `'boot tape'`

     or, `'boot disk'`

   Note: You can boot from production media (tape or CD–ROM) if your backup media fails to boot. The initial Welcome screen includes an option to enter a maintenance mode in which you can continue the installation from your backup media. Refer to Troubleshooting an Installation from a System Backup, on page 11-8 for more information.

   After several minutes, `c31` is displayed in the LED.

7. Choose the system console, if necessary.

   If you have more than one console on your machine, each terminal and direct–attached display device may present a screen that instructs you to press a key to identify your system console. If these screens appear, press the specified key on the device you choose for your system console. The system console is the keyboard and display device used for installation and system administration. Press a key on only one console.

   However, if the **bosinst.data** file lists a valid display device for the **CONSOLE** variable, you do not manually choose a system console. Read Customizing the BOS Install Program, on page 4-1 for more information about the **bosinst.data** file.

8. The type of screen that appears next depends on whether you are attempting a prompted or nonprompted installation. Go to one of the following sections:

- Nonprompted Installation, on page 5-9 if the backup image is configured to install automatically, without having to respond to the installation program.

  OR

- Prompted Installation, on page 5-10 if you need to use menu prompts to install the backup image. Use these instructions also if a nonprompted installation halts and the Welcome to Base Operating System Installation and Maintenance screen appears.

Nonprompted Installation

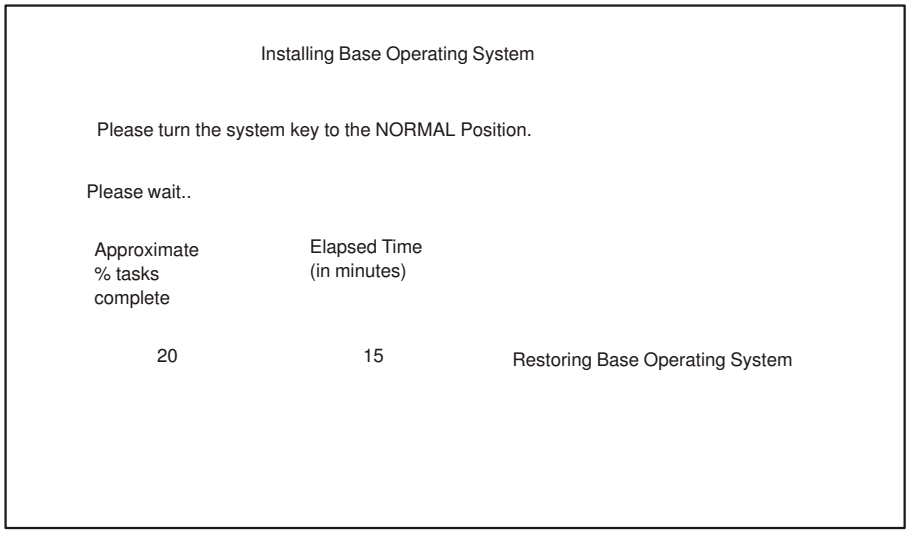
A successful nonprompted installation requires no further instructions because the installation is automatic. The sequence of events follows:

1. The first BOS installation screen appears on the monitor. This screen is untitled and blank, except for a zero digit (`0` in the bottom left corner.

   The screen pauses for five to ten seconds before the next screen appears. If you wish, you can use the short pause to interrupt the automatic installation and start a prompted session. Do this by typing **000** (three zeros) at the terminal. The installation will continue in a prompted mode.

Note: The nonprompted installation stops and prints the Welcome to Base Operating System Installation and Maintenance screen if the backup image holds configuration information incompatible with the machine you are installing. For example, if the image specifies a target disk that does not match what is in the machine, BOS installation starts a prompted session in which you can modify the installation.

2. The Installing Base Operating System screen appears next.



This second screen signals the start of the BOS installation, reporting the rate of completion and duration.

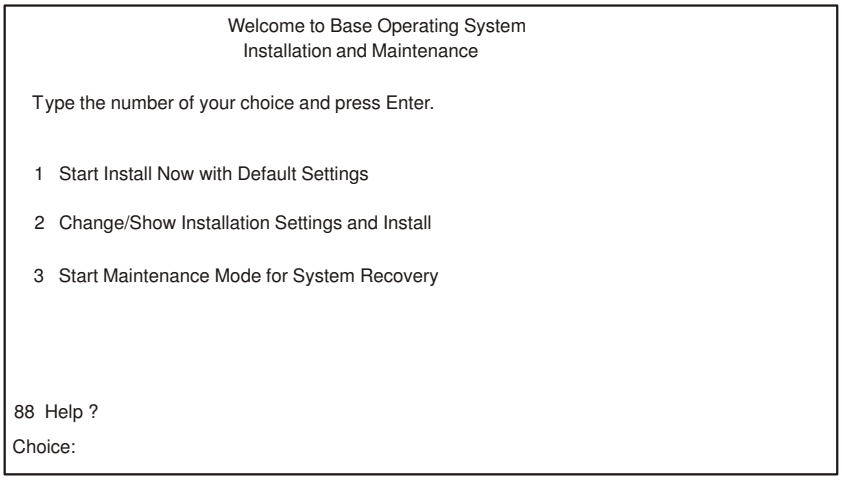
The `Please turn the system key to the NORMAL Position` message appears on this screen if the key is not already in the Normal position. You can turn the key at any time while the screen is showing. The installation continues regardless of the key position.

3. The system reboots when the installation completes.

The reboot is automatic if the system key (if present) is in the Normal position. Otherwise, another screen directs you, at the end of the installation, to turn the key to Normal and press `Enter` . The system reboots, in this case, when you press the `Enter` key.

Prompted Installation

The Welcome to the Base Operating System Installation and Maintenance screen is the first screen to appear for prompted installations. This and subsequent BOS installation screens provide help text, which you can view by entering **88**.



1. Choose the **Change/Show Installation Settings and Install** option.

   The System Backup Installation and Settings screen appears.

```
                    System Backup 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.

          Setting:                                          Current Choice(s):

       1  Disk(s) Where You Want to Install..... hdisk0...
             Use Maps..... Yes

       2  Shrink File Systems..... Yes


    >>>  0  Install with the settings listed above.


          88  Help ?
          99  Previous Menu

    >>>  Choice: 0
```

   This screen shows current settings for the system. An ellipsis follows the disk listed in the first line if there is more than one disk selected.

2. Either accept the settings or change them. For more information on using map files, see Backing Up Your System, on page 45-11 .

   To accept the settings and begin the installation, skip to step 8.

   To change the settings, continue with step 3.

3. Enter **1** in the System Backup Installation and Settings screen to specify disks where you want to install the backup image. The Change Disk(s) Where You Want to Install screen appears.

```
                    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    Maps

    >>>  1  hdisk0   00–00–0S–0,0      80          rootvg        yes         yes
         2  hdisk1   00–01–00–1,0      60          not in VG     yes         no



    >>>  0  Continue with choices indicated above.

         66  Disks not known to Base Operating System Installation

         88  Help ?
         99  Previous Menu

    >>>  Choice  [0]:
```

   This screen lists all available disks on which you can install the system backup image. The >>> (three greater–than signs) mark each selected disk.

4. Type the number and press `Enter` , for each disk you choose. Type the number of a selected disk to deselect it. You can select more than one disk.

You can also specify a supplemental disk by entering **66** and pressing the `Enter` key) 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. BOS installation configures the system for the disk and then returns to the Change Disk(s) Where You Want to Install screen.

5. Press the `Enter` key when you finish selecting disks.

   The screen that appears next depends on whether *all* the selected disks have map files available:

   – If one or more selected disks have no maps, BOS installation returns directly to the System Backup Installation and Settings screen. Skip to step 7.

   – If all selected disks have maps, the Change Use Maps Status screen appears, where you choose either to use or not use the maps for installation. Continue with step 6.

   To preserve the placement of files during a future restoration of the backup, you can create map files before backing up a system. Map files, stored in the **/tmp/vgdata/rootvg** directory, match the physical partitions on a drive to its logical partitions. Create map files either with the SMIT Backup the System menu or the **mkszfile** command, or specify the **–m** option when you run the **mksysb** command.

   For more information about map files, see Using Map Files for Precise Allocation in *AIX 4.3 System Management Guide: Operating System and Devices*.

6. Enter either **1** or **2** in the Change Use Maps Status screen to specify whether the installation program is to use maps.

   When you complete this choice, BOS installation returns to the System Backup Installation and Settings screen.

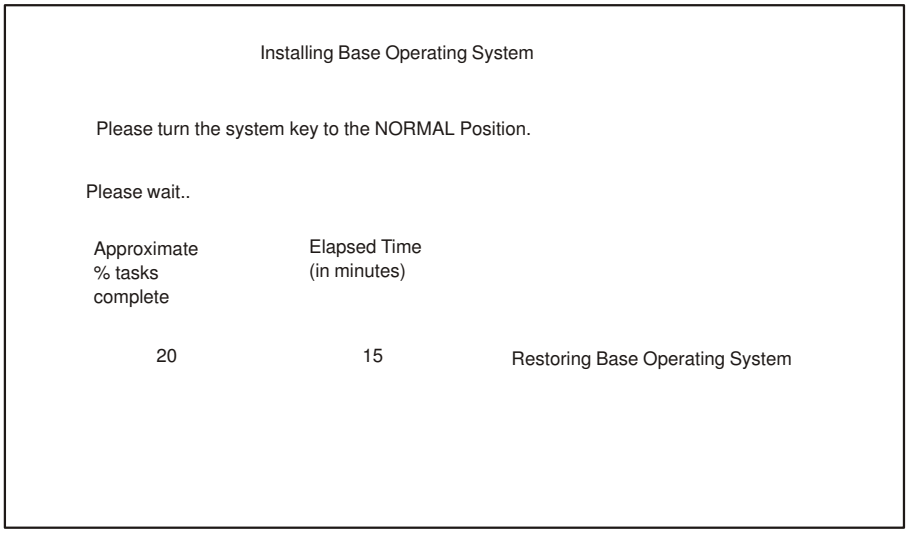
7. Decide whether BOS installation is to shrink file systems on the disks where you install the system. When you choose this option, the logical volumes and file systems within a volume group are recreated to the minimum size required to contain the data. This reduces wasted free space in a file system.

   File systems on your backup image might be larger than required for the installed files. Press the `2` key to toggle the **Shrink File Systems** option between **Yes** and **No** in the System Backup Installation and Settings screen. The default setting is **No**.

   Note: Shrinking the file system will disable the use of maps.

8. Enter **0** to accept the settings in the System Backup Installation and Settings screen.

   The Installing Base Operating System screen appears, reporting the rate of completion and duration. Step 2 under Nonprompted Installation shows an example depiction of this screen.



The `Please turn the system key to the NORMAL Position` message appears on this screen if the key is not already in the Normal position. You can turn the key at any time while the screen is showing. The installation continues regardless of the key position.

An untitled screen temporarily replaces the Installing Base Operating System screen if you specified a supplemental disk in 4step 4. This screen pops up about halfway through the installation, instructing you to again put the device–support diskette in the drive and press the `Enter` key. BOS installation reconfigures the supplemental disk, then returns to the Installing Base Operating System screen, which continues to report the progress of the installation.

The system reboots automatically when the installation completes.

The reboot is automatic if the system key (if present) is in the Normal position. Otherwise, a new screen directs you, at the end of the installation, to turn the key to **Normal** and press `Enter` . The system reboots, in this case, when you press the `Enter` key.

Where Do I Go Next?

In new installations on graphical systems, a post–installation program, *Configuration Assistant*, starts automatically when BOS installation reboots the system. For ASCII systems, the post–installation configuration program is *Installation Assistant*. Whether this configuration program starts following your backup installation depends on settings in your backup image:

- If the **bosinst.data** file in your backup image specifies a customization script, Configuration Assistant (or Installation Assistant for ASCII) does not start. The script, which takes the place of Configuration Assistant or Installation Assistant, configures your system before the BOS installation program reboots.
- If the system on which your backup image was made has not been configured with Configuration Assistant (or Installation Assistant for ASCII), Configuration Assistant (or Installation Assistant for ASCII) starts immediately following the BOS installation reboot.
- If the system on which your backup image was made has already been configured with Configuration Assistant (or Installation Assistant for ASCII), the system prompt appears immediately following the BOS installation reboot. Configuration Assistant (or Installation Assistant for ASCII) does not start.

Go to Customizing Your Installation, on page 3-1 to configure the installed machine with optional software, network communications, user accounts, and other settings.

If the Configuration Assistant (or Installation Assistant for ASCII) does not start automatically, and you do not want to configure the machine, the installation from backup is complete.

Installing the Base Operating System (BOS) from a System Backup Using the Web-based System Manager

1. Launch the Web–based System Manager by typing the following on the command line as root user:

   ```
   /usr/websm/bin/wsminstall
   ```

2. When the Software container is displayed, select the Reinstall Base Operating SystemTaskGuide.
3. At the next panel, choose the installation device:
   - Network

     If you choose this option, your machine must either be a configured NIM client, or have access to a NIM environment. If your machine is not a NIM client, the Reinstall Base Operating System TaskGuide will lead you through the process step by step. For more information on setting up a NIM environment, see Basic NIM Operations and Configuration in the *AIX 4.3 Network Installation Management Guide and Reference*.
   - Tape or CD–ROM
4. After choosing the installation device, choose **Install a system backup image (mksysb)** as the installation type:
5. Follow the TaskGuide prompts to complete the procedure.

Chapter 6. Installing Optional Software and Service Updates

This chapter describes how to install optional software and service updates onto standalone systems using the Web-based System Manager Software application or the System Management Interface Tool (SMIT).

This chapter includes:

Introduction to Installing Software and Service Updates

After the Base Operating System (BOS) is installed, you may want to install optional software or service updates. This chapter discusses software installation and applying service updates, but does not discuss committing service updates after installation. For information on committing, rejecting, and removing software after installation, refer to Maintaining Optional Software, on page 8-1 and Optional Software Installation and Update Concepts, on page A-1 .

For information on cleaning up after an interrupted software installation, refer to Cleaning Up Optional Software and Service Updates, on page 11-11 .

Compatibility between AIX Version 3.2 and AIX Version 4.3, on page C-1 discusses compatibility between the two release levels and lists the compatibility software for machines running mixed levels of AIX. It is recommended that you install this compatibility software if you did not perform a Migration Installation.

Information about individual software products is available in HTML format and is not included in this book. To view the software products information:

Information about individual software products is available in ”Hypertext Library for AIX 4.3” CD-ROM

Optionally installed software includes the following:

Optional Software Products. An *optional software product* is software that is not automatically installed on your system when you install BOS.

Service Updates. A *service update* is software that corrects a defect in or adds new function to the BOS or an optional software product.

Service updates are organized by *filesets*. Filesets are sets of files that are part of the same optional software product. Some products are not organized as fileset updates. Such products can only be updated by installing a newer version.

For more information on updating software, see Optional Software Installation and Update Concepts, on page A-1 .

Installing and Running Hardware Diagnostics

If your system is not equipped with a CD–ROM drive, install the hardware diagnostics bundle from your installation media to enable concurrent hardware diagnostics.

If your system is equipped with a CD–ROM drive, use the **diag** command to run concurrent diagnostics from the diagnostics CD–ROM. Run diagnostics in the standalone mode by booting from the diagnostics CD–ROM.

Software Licensing

Software is selected for installation if it is in the bundle you choose and on the installation media. Normally, software requiring a license is only selected if you have the license for that software. The Web-based System Manager Software application and the SMIT Custom Install tool do, however, allow you to install software requiring a license even if you do not have a license. You will not be able to run this software, however, until you have obtained the license.

Software Packaging

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 licensed program (also known as *product*) is 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. An example of a fileset is:

bos.net.nfs.client 4.3.0.0

Fileset Update An individually installable update. Fileset updates either enhance or correct a defect in a previously installed fileset. An example of a fileset update is:

bos.net.nfs.client 4.3.0.3

Bundle A collection of packages, products, or individual filesets that suit 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 BOS which contain a specific set of optional software. The Web-based System Manager Software application and the SMIT Install application look for bundles in **/usr/sys/inst.data/sys_bundles** and in **/usr/sys/inst.data/user_bundles**. The **sys_bundles** location is typically reserved for system–defined bundles (those which come with AIX). The **user_bundles** directory is where users can create their own bundle files. The bundle definition file name must end in **.bnd**, since the AIX install interfaces which process bundles recognize only bundle files that end in **.bnd**. Use any editor to create bundle files, which can contain comments and fileset names. Lines beginning with ”#” are recognized as comments and are ignored by the bundle processing code. When you have completed your list of filesets, save the file and make sure the file has the appropriate read permission. Invoking a bundle install interface displays your bundle without the **.bnd** extension. AIX documentation is not automatically installed when you install BOS or a predefined bundle. The documentation is contained on ”Hypertext Library for AIX 4.3” CD-ROM. For information about installing AIX documentation and the documentation search service, see Installing and Configuring the Documentation Search Service and Installing AIX Documentation, on page 7-1.

The following are examples of the predefined bundles:

- *Client Bundle*. A collection of commonly installed software packages for single–user machines running AIX in a standalone or networked client environment. This bundle minimizes disk utilization by only installing software required for a single–user machine rather than installing server code and the other software available on the installation media.
- *Server Bundle*. A collection of software packages for machines running AIX in a multiuser standalone or networked environment. This bundle emphasizes functionality over disk utilization.
- *Application Development Bundle*. A collection of software packages used for developing application programs.
- *Hardware Diagnostic Bundle*. A collection of software packages that provides hardware diagnostic tools.
- *Graphics_Startup Bundle*. A collection of software packages that provides support of graphical environments. Graphical support may be automatically installed on some systems during BOS installation. See Software Installed Automatically during BOS Installation, on page B-1 for more information.

Note: Some system bundles may refer to installation images that may be spread across multiple media. If you see errors that filesets could not be found on the media you are using, insert another media and retry the bundle install. For example, the *Client Bundle* may contain a web browser package that is contained on another media. Another example might be filesets or packages that are located on the AIX Version 4.3 Bonus Pack CD–ROM media. Refer to the bundle files on the system for information about the location of images that are not on the AIX Version 4.3 media. The information is in: **/usr/sys/inst.data/sys_bundles**.

The following bundle appears only if there was not enough disk space available to complete a Migration Installation during the BOS installation process:

- *Migration Bundle*. A collection of migration software packages. Install this bundle if you want to complete the Migration Installation. You may also need to install the *Graphics_Startup Bundle*. See Migration Installation, on page 2-11 for more information.

Migrating Software to AIX Version 4.3

If you are migrating AIX Version 3.2 programs, a BOS Migration Installation only migrates those optional software products that run on BOS Version 4.3. If you are migrating AIX Version 4.1 or AIX Version 4.2.f programs and there is a newer level of a previously installed fileset on the installation media, a BOS Migration Installation attempts to install the newer level. Any previously installed products that can be run on BOS Version 4.3 will not be altered during the Migration Installation. In cases where a BOS Migration Installation does ”migrate” a product, it does so by running the **installp** command to install the latest version of that product at the base level. After installation, the product is in the committed state, and the previous version of the product is deleted from the system.

When the latest base level of a product is installed (whether it is installed by the user or through a Migration Installation), the user configuration files from the previous version of the product are saved. In some cases you may need to compare the previous configuration files with the new ones and resolve any differences.

To Install Optional Software and Service Updates

After completing the prerequisites in this section, your next step is deciding whether to install software with the Web-based System Manager Software application or with SMIT. Descriptions of both applications are included in this section.

Before you install optional software and service updates, refer to the specific instructions that accompany your installation media. If you ever need to reinstall your system, be sure to refer to the installation media instructions.

Note: Vendors who want information about how to develop software products that are to be installed using the **installp** command should refer to Packaging Software for Installation in *AIX General Programming Concepts: Writing and Debugging Programs*.

Determine Your Starting Point

If either of the following conditions apply to you, go to the referenced item; otherwise, continue with the procedures in this chapter.

- If you need to commit updates or remove previously installed software, go to the chapter Maintaining Optional Software, on page 8-1 .
- If you are using a network installation server, refer to *AIX 4.3 Network Installation Management Guide and Reference*.

Prerequisites

Before installing optional software or service updates, complete the following prerequisites:

- AIX Version 4.3 BOS must be installed on your system. If BOS is not yet installed on your system, go to Installing BOS from CD–ROM or Tape, on page 2-1 , or if you are installing over a network, refer to the *AIX 4.3 Network Installation Management Guide and Reference*.
- The software you are installing is available on either CD–ROM, tape, or diskette, or it is located in a directory on your system (for example, the /**usr**/**sys**/**inst.images** directory), or if your computer is a configured Network Installation Management (NIM) client, it is in an available **lpp_source** resource.
- If you are installing service updates and do not have a current backup of your system, use the procedures in Backing Up Your System, on page 9-1 . To create a system backup, you must have the backup fileset (**bos.sysmgt.sysbr**) installed on your system.
- If system files have been modified, it is a good idea to back them up separately before updates are applied, since it is possible that the update process may replace configuration files. You can use Web-based System Manager to find out which files have been updated:

  a. To start the Web-based System Manager Software application, enter: `wsm software` . The Software container displays.

  b. From either of the Software installation dialogs, click **Advanced**.

  c. Select **Show detailed messages**.

  Alternatively, use the **installp** command with the verbose option (**installp –V2**) to show you which files have been updated.
- Log in as root user if you have not already done so.
- If you are installing from CD–ROM then the installation application that you use (the Web-based System Manager Software application or SMIT) will create a temporary mount point for the CD–ROM.
- If you are using CD–ROM, tapes, or diskettes, insert the media that contains the optional software or service updates into the appropriate drive. vSome CD–ROM drives have a

removable disc caddy, while others have a sliding drawer. If the CD–ROM drive on your system has a sliding drawer, place the CD–ROM in the drawer and push the drawer in. If the CD–ROM drive on your system does not have a sliding drawer, insert the CD–ROM into the disc caddy and then insert the caddy into the CD–ROM drive.

- Based on whether you are installing with the Web-based System Manager Software application or with SMIT, continue with either To Install Optional Software and Service Updates with the Web-based System Manager Software Application, on page 6-6 or To Install Optional Software and Service Updates with SMIT, on page 6-7 .

To Install Optional Software with the Web-based System Manager Software Application

The graphical interface provides access to Web-based System Manager Software options for installing the following (you must have root authority to install software with these options):

- Optional software
- Service updates
- Software bundles.

See Using Web-based System Manager for further information about using the Web-based System Manager graphical interface.

Installing Optional Software and Service Updates

The Web-based System Manager Software application allows you to install software as well as to change the system's default install settings and specify other options. By default, the Web-based System Manager Software application applies and commits any software updates you are installing. You can, however, change this default setting and have software updates only applied during installation.

Note: Base software applications are always committed. If a previous version of the software is installed, it cannot be saved.

To install optional software:

1. To start the Web-based System Manager Software application, enter: `wsm software` . The Software container displays.
2. Select **Software** from the menu.
3. From the pulldown, select **New Software (Install/Update)** > **Install Additional Software (Custom)**.

To view extended help for the Web-based System Manager Software tasks, select **Contents** from the Help menu.

To install service updates:

1. To start the Web-based System Manager Software application, enter: `wsm software` . The Software container displays.
2. Select **Software** from the menu.
3. From the pulldown, select **New Software (Install/Update)—>Update Software (Update All** / **Install Fixes**).

To view extended help for the Web-based System Manager Software tasks, select **Contents** from the Help menu.

Neither the **Install Additional Software (Custom)** option nor the **Update Software (Update All** / **Install Fixes)** option allows you to remove a software fileset or to reject an applied update. To perform these tasks using a Web-based System Manager Software application, refer to Maintaining Optional Software, on page 8-1 .

Installing Software Bundles

With a minimum of decision–making, you can install software bundles with the Web-based System Manager Software application. The basic decisions required by this application are:

- What will the software source be?
- Which software bundle is to be installed (such as the client or server bundle)?
- Is only licensed software in the bundle to be installed?

This application is intended for users whose software needs are met by an existing bundle. Advanced options include whether to commit updates at the same time the bundle is installed without saving the previous version of the software.

To install software bundles:

1. To start the Web-based System Manager Software application, enter: `wsm software` . The Software container displays.
2. Select **Software** from the menu.
3. From the pulldown, select **New Software (Install/Update)** and then select **Install Bundles (Easy)**.

To view extended help for the Web-based System Manager Software tasks, select **Contents** from the Help menu.

Should a problem occur during the installation of optional software that interrupts the installation process, you may have to perform 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 and Service Updates, on page 11-11 .

To Install Optional Software and Service Updates with SMIT

This procedure describes how to use SMIT to install optional software and service updates. There are three installation paths available in SMIT: Bundles (easy install), Selective Install, and Fixes:

Bundles	Using the Install Software Bundle (Easy Install) path, you need only specify the input device and which bundle you are installing. You can also preview a bundle install to see what software will be installed and how much space is required in the file system to install the bundle.
Install and Update	Using Install and Update, you can choose specific software to install, apply or commit updates, and preview the install to see what software will be installed and how much space is required in the file system to install the software.
Fixes	To install a specific fix for a problem, use the Update Software by Fix (APAR) menu. This menu allows you to list all service fixes on the media and select a fix to install. You can also preview the installation to see what software will be updated and how much space is required in the file system to apply the fix.

Note: Should a problem occur during the installation of optional software that causes the installation 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 and Service Updates, on page 11-11 .

To Access SMIT Installation Menus

At the system prompt, enter the fast path: `smit install_update` .

The SMIT application opens with the Install and Update Software screen displayed. From this screen, you can choose whether to continue along the Easy Install or Custom Install path.

To Install Software and Service Updates with Easy Install

This section details the procedure for installing the bundle contents. 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 the bundle contents:

1. Use the arrow keys to highlight the **Install Software Bundle (Easy Install)** option from the Install and Update Software screen and press Enter. The Install Software Bundle (Easy Install) screen is displayed.
2. The **INPUT device/directory for software** option is highlighted. Press the F4 key to display a list of the available input devices or directories. The input *device* is the tape, diskette, or CD–ROM drive that you are using to install the software. The input *directory* is the directory on your system containing software for installation (for example, the **/usr/sys/inst.images** directory).
3. Select an input device or directory and press Enter. The device or directory you selected is now displayed in the **INPUT device/directory for software entry** field.

   Note: If you are installing from CD–ROM, the CD–ROM device must be mounted to a CD–ROM file system. SMIT automatically creates this mount point for you. If you install from the command line using the **installp** command, however, you must specify the directory on which the CD–ROM is mounted with the **–d** option of the **installp** command.
4. The **Bundle** field is now displayed below the INPUT device/directory for software field.
   a. The **Bundle** field is highlighted. Press the `F4` key to display a list of bundles to be installed.
   b. Select a bundle from the list and press Enter. The bundle you selected is now displayed in the new entry field.
5. Press Enter to begin the installation process. After you press Enter, an ARE YOU SURE? pop–up message displays to confirm that you want to continue with the installation.

   Note: If you are installing from tape, it may be several minutes before the contents of the bundle are displayed or installed.

To Install Software and Service Updates with Custom Install

This section details the procedure for installing software products at the latest level. The same procedure can be followed for the other options listed in the Install and Update Software screen in step 1 of the following procedure. The SMIT screens that you use vary depending on which option you choose to update your system.

- Select the **Install and Update from LATEST Available Software** option to install one or more of the optional software products that exist on the installation media. If any updates exist for these products, they will also be installed. Individual updates are displayed for software that you currently have installed.
- Select the **Update Installed Software to Latest Level (Update All)** option to update your currently installed software to the latest level. You can use this option to update currently installed software to a maintenance level or apply all updates to currently installed software from a selective fix media.
- Select the **Install and Update Software by Package Name (includes devices and printers)** option to install software by package name. This option first displays a list of the products available on the media, for example printers, communications and devices. When you select a product, a list of packages for the product you selected is displayed. You can then select one or more software packages to install.

- Select the **Install Software Bundle (Easy Install)** option to install a collection (bundle) of software products.
- Select the **Update Software by Fix (APAR)** option to install one or more of the fileset updates that exist on the installation media, including all messages and locales.
- Select the **Install and Update From ALL Available Software** option to install all the optional software products and updates that exist on the installation media.

Use the following procedure to install software products at the latest level:

1. Select the **Install and Update Software** option from the Software Installation and Maintenance screen and press Enter. The Install and Update Software screen is displayed.
2. Select the **Install and Update from LATEST Available Software** option from the Install and Install and Update Software screen and press Enter. After the option is selected, a screen asking you to specify the input device or directory is displayed.
3. The **INPUT device/directory for software** option will be highlighted. Press the F4 key to display a list of the available input devices or directories. The input device is the tape, diskette, or CD–ROM drive that you are using to install the software. The input directory is the directory on your system containing software for installation (for example, the **/usr/sys/inst.images** directory).
4. Select an input device or directory and press Enter. The device or directory you selected is now displayed in the **INPUT device/directory for software entry** field.

   Note: If you are installing from CD–ROM, the CD–ROM device must be mounted to a CD–ROM file system. SMIT automatically creates this mount point for you. If you install from the command line using the **installp** command, however, you must specify the directory on which the CD–ROM is mounted with the **–d** option of the **installp** command.

   The screen that is displayed next lists the different installation options.
5. The default setting for the SOFTWARE to Install menu options is **_all_latest**, which installs all the software on the media, except devices and printers, or **select _all_licensed for the SOFTWARE to Install** menu option, which installs all the software for which you have a license or for which no license is required (this is the default option on the Install Software Bundle (Easy Install) menu).

   To display a list of software products from which you can selectively install, press the F4 key to display a list of available software products or bundles. Use the Page Up and Page Down keys or the arrow keys to scroll through the list. To select one or more items, highlight the item and press the F7 key. A greater–than (>) symbol is displayed next to the selected item. To deselect a previously selected item, move the cursor to highlight that item again and press the F7 key again.

   Note: The screen containing the default settings can include one of the following options. The option that appears on this screen depends on the option you selected from the Install and Update from LATEST Available Software screen.

SOFTWARE to install	[_all_latest]
BUNDLE	[_all_licensed]
SOFTWARE to update	[_update_all]

(Please note that [_update_all] applies only the updates for software that is installed on your system.)

If you are installing a maintenance level, it should be committed in order to receive all fixes issued since the base level release. If your disk space is limited, you can save space in the **/usr** and **root** file systems by not saving replaced files.

Note: If you are installing from tape, it may take several minutes to display a listing of the tape's contents after pressing the F4 key.

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. To change the settings with a **yes** or **no** value, highlight the field and use the Tab key to toggle **yes** or **no**.

   Note: The elements selected for **Include corresponding LANGUAGE filesets?** are the elements that are used in the main Web-based System Manager and SMIT install applications. The values for these elements are stored in the file **/var/adm/ras/bosinst.data**. If you want different messages and locales installed when installing additional software or bundles of software, edit the **/var/adm/ras/bosinst.data** file and change the values of the locale stanza.

   If you wish to preview the results of the installation before actually installing the software, highlight the **PREVIEW only? (install operation will NOT occur)** field and change the setting to a **yes** value. The preview information indicates any software that is requisite to software you are installing.

7. Press Enter when you are satisfied with all the settings on this screen. The ARE YOU SURE? pop–up message is displayed to confirm that you want to continue with the installation.

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

Completing the Installation and Reading the Status Messages

This section describes the system's activity and actions required of you after the installation process has begun.

1. When you press Enter to start the installation, the COMMAND STATUS screen is displayed.

   A series of messages are displayed as the installation proceeds. The amount of time the installation takes varies depending on your system and the software you are installing and updating.

   Note: The system may prompt you, with a message similar to the following, to insert the next tape or diskette:

   ```
   Mount volume 2 on /dev/rmt0.
   Press the Enter key to continue.
   ```

   When this message is displayed, insert the specified tape or diskette and press Enter.

   When the installation finishes, the Command: status field on the COMMAND STATUS screen changes to **OK** or **failed**. **OK** means the installation ran to completion, though some filesets may not have installed successfully. The **failed** status means that not everything you requested was installed. A preview install always finishes with an **OK** status.

   For information about error messages, refer to Error Messages and Output from the installp Command, on page A-6 .

2. When the installation halts or finishes, the screen returns to the top of the list of messages that are displayed during 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**).

3. Review the message list for error messages and software products or service updates that may not have been successfully installed. 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 whether any installation failure occurred.

b. Use the message list to determine problems and find which software products or service updates 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 or service updates to install.

c. Any product that is marked as FAILED, BROKEN, or CANCELLED must be reinstalled. You do not need to reinstall any service update or 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**.

   If you need to perform the installation again and you have more than one tape or diskette, remove the tape or diskette from the drive, press F10 to exit SMIT, and return to Prerequisites, on page 6-5 . See Acting on System and Error Messages, on page 12-1 for information about **bosboot** command errors that may occur while the install program is running, and about recovery procedures for these errors.

d. If the installation was interrupted (for example, a power failure), you may need to use the cleanup procedure before continuing. Press F10 to exit SMIT and refer to Cleaning Up Optional Software and Service Updates, on page 11-11 .

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

4. If you have additional software to install that is on a different CD–ROM, tape, or diskette, do the following:

   a. Remove the CD–ROM, tape, or diskette from the drive.

   b. Insert the CD–ROM, tape, or diskette for the software you are installing into the drive.

   c. Press F3 to return to the previous screen and continue installing the software product or service update from tape or diskette.

5. Press F10 to exit SMIT.

6. Remove the installation media from the drive.

7. Reboot your system when a message directs you to do so. To reboot your system, enter:

   ```
   shutdown -Fr
   ```

Where Do I Go Next?

At this point, you may want to do one or more additional tasks before using your system:

README Files

- The software you installed may contain README files with late–breaking news. For information on how to view README files, refer to Viewing README Files, on page 13-1 .

AIX Documentation

- Go to Installing AIX Documentation and Installing and Configuring the Documentation Search Service, on page 7-1 and read the Introduction. This will assist you in installing the documentation search service and/or the AIX online documentation.
- If you do not want to install theDocumentation Library Service and/or AIX documentation at this time, you may want to create a new backup of your system at this point. Go to Backing Up Your System, on page 9-1 .

Chapter 7. Installing AIX Documentation and Installing and Configuring the Documentation Search Service

This chapter provides information about installing and configuring the documentation search service, as well as installing the documentation server and client. Also included are the steps you need to perform to install the online AIX documentation, which is contained on the ”Hypertext Library for AIX 4.3” CD-ROM and the ”Hypertext Library for AIX 4.3” CD-ROM.

Installing the AIX Documentation

To access and view the online documentation using the **hyper** command, follow the procedure described in the booklet of the ”Hypertext Library for AIX 4.3” CD-ROM”. See also the ”About the Documentation CD–ROM leaflet.

The AIX online documentation is delivered on one of two CD-ROMs:
– 86 A2 72JX: Hypertext Library. Basic Subset for AIX 4.3
– 86 X2 73JX: Hypertext Library. Full Set for AIX 4.3

Instructions for installing the *Hypertext Library* are contained in the CD-ROM booklet and must be scrupulously followed.

The *Hypertext Library* comes with a set of tools called *Hypertext Library Utilities.* This set of tools contains a **Search** function allowing to search for information through the entire Library and a **Multi-Print** capability allowing to print several documents with a single click in the Search Results window.

The *Hypertext Library* and the *Hypertext Library Utilities* have both a graphical and character interface.

The contents of the *Hypertext Library* and the *Hypertext Library Utilities* are described in the *Hypertext Library* home page.

More information can be found in the leaflet: *”About the Documentation CD-ROM”*.

The following information in this chapter **does not** concern the *Hypertext Library*. In particular, **do not use** the *Search Service* described herafter with the *Hypertext Library*.The ”Hypertext Library for AIX 4.3” CD-ROM” comes with its own search engine, different from the AIX documentation search engine (**bos.docsearch**) described in this chapter. You do not need to install and configure **bos.docsearch** to view the documentation contained in the ”Hypertext Library for AIX 4.3” CD-ROM”.

Go to Where Do I Go Next?, on page 7-1 for information on continuing your AIX installation tasks.

Where Do I Go Next?

At this point, you may want to do one or more additional tasks before using your system:

- The software you installed may contain README files with late–breaking news. For information on how to view README files, refer to Viewing README Files, on page 13-1.
- You might want to create a new backup of your system at this point. Go to Backing Up Your System, on page 9-1.

- For information on how to view the AIX documentation, go to Accessing Online Information in *AIX 4.3 Quick Beginnings*.
- For further information about the documentation search service, go to Documentation Search Service in *AIX 4.3 System Management Guide: Operating System and Devices*.

Chapter 8. Maintaining Optional Software

This chapter describes how to commit previously installed service updates, reject uncommitted service updates, and remove a software option from the system. You can use either the Web-based System Manager Software application or the System Management Interface Tool (SMIT) to perform these tasks.

This chapter includes:

If the service update was not committed during installation, then you must commit it after installation once you have decided that you will not be returning to the previous version of the software. Committing the updated version of the service update deletes all previous versions from the system and recovers the disk space that was used to store the previous version. When you are sure that you want to keep the updated version of the software, you should commit it. By freeing up disk space, it is faster and easier to process any new updates you apply at a later date. Before installing a new set of updates, you may want to consider committing any previous updates that have not yet been committed.

If, however, you decide to return to the previous version of the software, you must *reject* the updated version that was installed. Rejecting a service update deletes the update from the system and returns the system to its former state. A service update can only be rejected if it has not yet been committed. Once committed, there is no way to delete an update except by removing the entire fileset, or by force–installing the fileset back to a previous level (you must have the base level of the fileset available on media to do this).

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. A fileset is always removed with all of its updates. 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 standalone system with SCSI disk drives, 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 and Service Updates, on page 11-11 .

For more information about commit, reject, and remove, refer to Optional Software Installation and Update Concepts, on page A-1 .

Maintaining Optional Software and Service Updates with the Web-based System Manager Software Application

The graphical interface provides access to the Web-based System Manager Software application, from which you can view and work with the products, packages, filesets, and updates in a graphical format. The application enables you to select software and perform maintenance functions, such as committing and rejecting service updates and removing and verifying software. You must have root authority to use this application.

To commit or reject applied software updates:

1. To start the Web-based System Manager Software application, enter the fast path: `wsm software` . The Software container displays.
2. Select **Software** from the menu.
3. From the pulldown, select **Software Utilities**.
4. To commit updates, select **Commit Applied Updates**. To reject updates, select **Reject Applied Updates**.

To view extended help for the Web-based System Manager Software tasks, select **Contents** from the Help menu.

To remove software:

1. To start the Web-based System Manager Software application, enter the fast path: `wsm software` . The Software container displays.
2. From the Software container, select the software you want to remove.
3. Select **Selected** from the menu.
4. From the pulldown, select **Remove Software**.

To view extended help for the Web-based System Manager Software tasks, select **Contents** from the Help menu.

See Using Web-based System Manager for information about how to access the graphical interface and how to work with Web-based System Manager applications.

Maintaining Optional Software and Service Updates with SMIT

This section details the procedure for committing software updates. The same procedure can be followed for rejecting service updates and removing software filesets. The SMIT screens that you use vary depending on which action you are performing on the software.

To reject service updates, use the following fast path: **smit install_reject**.

To remove software filesets, use the following fast path: **smit install_remove**.

Note: You can determine the software products installed on your system by entering the following at the command line:

```
lslpp -L
```

To Commit Service Updates

If you already committed the installed service update using the **Apply**/**Commit** option of the Install and Update Software Manager application, you do not need to commit the service update again.

Note: You can determine the service updates that are not committed by entering the following at the command line:

```
installp -s
```

Use the following procedure to commit service updates that are in the applied state.

1. Log in as root user if you have not already done so.
2. Enter the following SMIT fast path: **smit install_commit**.
3. Press Enter when you are satisfied with all the settings on the Commit Applied Software Updates (Remove Saved Files) screen. The ARE YOU SURE? message pops up over the previous screen. If you set the preview function to **Yes**, then commit will not actually occur. In this case, repeat this procedure with the preview function set to **No** when you want to commit the software.

   Note: If you are rejecting service updates or removing software filesets, you must select software from a list. When more than 100 filesets are selected for reject or removal, overflow conditions may occur.

Chapter 9. Backing Up Your System

This chapter describes how to use Web-based System Manager or the System Management Interface Tool (SMIT) to create and verify a bootable backup copy, or *image*, of your root volume group. This chapter also describes how to make separate backup copies of user volume groups.

For an ASCII system, you can also use Installation Assistant to back up your system. Refer to Customizing Your Installation, on page 3-1 for more information. When you back up your system using Installation Assistant, the required **bos.sysmgt.sysbr** fileset is automatically installed.

This chapter includes:

Introduction to Backing Up Your System

A backup image serves two purposes. One is to have a working copy of your system in case your system becomes corrupted. The other is to transfer installed and configured software from one system to others. You can use the Web-based System Manager Backups application or the SMIT Back Up the System menu to make a backup image of the root volume group. Use the Web-based System Manager Volumes application or the SMIT Back Up a Volume Group menu to make a backup image of user volume groups.

Starting with AIX Version 4.3.3 you can use the Web-based System Manager Backups application (System Backup to CD–R TaskGuide) to back up the root volume group or a user volume group to CD. You can also use the SMIT Back Up This System to CD menu to make a backup image of the root volume group to CD and the SMIT Back Up a Volume Group to CD menu to make a backup image of a user volume group to CD. Refer to Introduction to Backups on CD for more information on this subject.

The *root volume group* is a hard disk, or group of disks, containing start up files, BOS, configuration information, and any optional software products. A *user volume group* (also called *nonroot volume group*) typically contains data files and application software.

The Web-based System Manager Backups application and the SMIT **Back Up The System** menu (in AIX Version 4.3.3 SMIT Back Up This System to Tape/File menu) both use the **mksysb** command to create a backup image, stored either on tape or in a file. If you choose tape, the backup program by default writes a *boot image* to the tape, which makes it suitable for installing.

The Web-based System Manager Backups application (System Backup to CD–R TaskGuide), SMIT **Back Up This System to CD** menu, Web-based System Manager Volumes application (System Backup to CD–R TaskGuide), and SMIT Back Up a Volume Group to CD menu, all use the **mkcd** command, which calls the **mksysb** or **savevg** command, if needed. For system backups the CD's can be created as:

- non–bootable CD's
- generic CD's (bootable on any target system)
- personal CD's (bootable only on the source system)

Configuring before the Backup

The source system is the system from which you created the backup copy. The target system is the system on which you are installing the backup copy.

Configure the source system before creating a backup image of it if you want the source and target to be identical. If you plan to use a backup image for installing other differently configured target systems, create the image *before* configuring the source system, or set the RECOVER_DEVICES variable to `no` in the **bosinst.data** file. Refer to Customizing the BOS Install Program, on page 4-1 for more information about the **bosinst.data** file.

The installation program automatically installs only the device support required for the hardware configuration of the source system. A target system that requires different device support or a different kernel can be installed with the source system's **mksysb** image on tape or on a personal backup CD, by booting from a product CD and then using the **mksysb** media to install the system. Any additional device support required on the target system is automatically installed after the **mksysb** image is restored. For further information, refer to Cloning Considerations, on page 5-4 .

A generic backup CD can be used to boot any target system. The **mksysb** images will be restored to the target system, and any additional software required to continue with the installation will be available on the generic backup CD.

Additional devices needed for the target system can also be installed on the source system before making the **mksysb** image. To install additional device support on the source

system, use the Web-based System Manager Devices application or the Install Additional Device Software SMIT menu option.

- If there is sufficient disk space on the source and target systems, install all device support. After installing the target system, you can selectively remove the device support not needed by the target.
- If there is limited disk space on the source and target systems, selectively install the device support required for the target machines.

For information on installing optional software, see Installing Optional Software and Service Updates, on page 6-1 .

Refer to Customizing the BOS Install Program, on page 4-1 for information about how to set installation parameters to enable you to bypass menu prompts when you install the target machine from a system backup.

If you install the backup image on other systems, you might not, for security reasons, want passwords and network addresses copied to the target systems. Also, copying network addresses to a target system creates duplicate addresses that can disrupt network communications.

Using the Web-based System Manager Backups application or the SMIT backup menu lets you preserve configuration information, thus avoiding some of the configuring tasks normally required after restoring a system backup. A backup preserves the configuration if:

- The target system has the same hardware configuration as the source system.

  AND

- The target has enough disk space to hold the backup image.

A backup transfers the following configurations from the source system to the target system:

- Paging space information
- Logical volume information
- rootvg volume group information
- Placement of logical partitions (if creating map files is selected in the Web-based System Manager Backups application or if the Create Map Files field is set to **yes** in the SMIT menu).

  Note: The use of Map files is not recommended if you plan to reinstall the backup to target systems other than the source system, or the disk configuration of the source system is to be changed before reinstalling the backup.

Mounting and Unmounting File Systems

The procedure in this chapter backs up only mounted JFS (Journaled File Systems) file systems in the root volume group. You must mount all file systems you want to back up before starting. Similarly, you must unmount file systems you do *not* want backed up, or use the **/etc/exclude.rootvg** file to list files you do not want backed up.

This backup procedure backs up files twice if a local directory is mounted over another local directory in the same file system. For example, if you mount / **tmp** over /**usr**/**tmp**, the files in the /**tmp** directory will be backed up twice. This duplication might exceed the number of files a file system can hold, which can cause a future installation of the backup image to fail.

Restoring a Backup Image

When installing the backup image, the system checks whether the target system has enough disk space to create all the logical volumes stored on the backup. If there is enough space, the entire backup is recovered. Otherwise, the installation halts and the system prompts you to choose more destination hard disks.

File systems created on the target system will be the same size as they were on the source system, unless the **SHRINK** variable was set to **yes** in the **image.data** file before the backup image was made, or the **SHRINK** option in the BOS Install menus is changed to **yes**. An exception is the / **tmp** directory, which can be increased to allocate enough space for the **bosboot** command. For information about setting variables, refer to the **image.data** file in *AIX Files Reference*.

When it finishes installing the backup image, the installation program reconfigures the Object Data Manager (ODM) on the target system. If the target system does not have exactly the same hardware configuration as the source system, the program may modify device attributes in the following target system files:

- All files in /**etc**/**objrepos** beginning with *Cu*
- All files in the /**dev** directory

For more information about installing (or *restoring*) a backup image, see Installing BOS from a System Backup., on page 5-1 .

To Back Up Your System

This section provides instructions for backing up your system, including how to back up the root volume group, verify a backup tape or CD, and back up a user volume group.

Complete the Prerequisites

- Be sure you are logged in as root user.
- Mount all file systems you want to back up. The **mksysb** command only backs up JFS (Journaled File Systems). Refer to the **mount** command for details.

  Note: The **mksysb** command does not back up file systems mounted across an NFS network.
- Unmount any local directories that are mounted over another local directory.
- Make at least 8.8MB of free disk space available in the /**tmp** directory. The **mksysb** command requires this working space for the duration of the backup.

  Use the **df** command, which reports in units of 512–byte blocks, to determine the free space in the /**tmp** directory. Use the **chfs** command to change the size of the file system, if necessary.

  For example, the following command adds 12MB of disk space to the /**tmp** directory of a system with 4MB partitions:

  ```
  chfs –a size=+24000 /tmp
  ```

- All hardware must already be installed, including external devices, such as tape and CD–ROM drives.
- The **bos.sysmgt.sysbr** fileset in the BOS System Management Tools and Applications software package must be installed. The **bos.sysmgt.sysbr** fileset is automatically installed in AIX Version 4.3. Enter the following command to determine if the **bos.sysmgt.sysbr** fileset is installed on your system:

  ```
  lslpp –l bos.sysmgt.sysbr
  ```

  If your system has the **bos.sysmgt.sysbr** fileset installed, continue with either To Back Up the Root Volume Group, on page 9-5 or To Back Up a User Volume Group, on page 9-10 .

  If the **lslpp** command does not list the **bos.sysmgt.sysbr** fileset, install it before continuing with the backup procedure. Refer to To Install Software and Service Updates with Custom Install, on page 6-8 for instructions, or enter the following command:

  ```
  installp –agqXd device bos.sysmgt.sysbr
  ```

  where *device* is the location of the software; for example, `/dev/cd0` for CD–ROM drive.

To Back Up the Root Volume Group

Use either the Web-based System Manager Backups application or SMIT to create a system backup stored either to tape or in a file. If you are using AIX Version 4.3.3 or later, the system backup image can be stored on CD.

Using Web-based System Manager

To use the Web-based System Manager application to back up the root volume group, enter the **wsm backup** fast path.

If you want to back up the root volume group to CD, use the following procedure:

1. Use the Web-based System Manager Backups application to back up the root volume group.
2. Enter the **wsm backup** fast path.
3. Double–click on the **System Backup to CD–R TaskGuide** icon, and follow the prompts.

Using SMIT to Backup System to Tape/File

1. Enter the **smit mksysb** fast path.

   The Back Up the System (Back Up This System to Tape/File in AIX Version 4.3.3) menu appears, highlighting the **Backup DEVICE or File** field.

2. Decide which medium you will use to store the backup and select the **Back Up DEVICE or FILE** field. If you want to create a bootable backup, the medium must be tape. Depending on the medium you chose, follow the appropriate step below:

TAPE	Press the F4 key to list available tape devices and highlight the device name.
FILE	Enter a full path and file name in the entry field.

3. If you want to create map files, select the `Create Map Files?` field and press the Tab key once to change the default value to **yes**.

   Map files match the physical partitions on a drive to its logical partitions. When installing from a backup image, the BOS installation program uses map files to position the logical volumes on the target drive in the same partitions they were on in the source system. If you do not create map files, the installation program relies on the Logical Volume Manager (LVM) to determine placement for the logical volumes. For more information, see Using Map Files for Precise Allocation in *AIX 4.3 System Management Guide: Operating System and Devices*.

   Note: If you plan to reinstall the backup to target systems other than the source system, or the disk configuration of the source system is to be changed before reinstalling the backup, the use of Map files is not recommended.

4. If you want to exclude certain files from the backup, create the **/etc/exclude.rootvg** file, with an ASCII editor, and enter the patterns of file names that you do not want included in your system backup image.

   The patterns in this file are input to the pattern matching conventions of the **grep** command to determine which files will be excluded from the backup. If you want to exclude files listed in the **/etc/exclude.rootvg** file, select the `Exclude Files` field and press the Tab key once to change the default value to **yes**.

   For example, to exclude all the contents of the directory called `scratch` , edit the exclude file to read as follows:

   ```
   /scratch/
   ```

   For example, to exclude the contents of the directory called **/tmp**, and avoid excluding any other directories that have /tmp in the pathname, edit the exclude file to read as follows:

   ```
   ^./tmp/
   ```

   Note: All files are backed up relative to the current working directory. This directory is represented by a **.** (dot character). To exclude any file or directory for which it is important to have the search match the string at the beginning of the line, use a **^** (caret character) as the first character in the search string, followed by a **.** (dot character), and then followed by the filename or directory to be excluded.

   If the filename or directory being excluded is a substring of another filename or directory, use **^.** (caret character followed by dot character) to indicate that the search should

begin at the beginning of the line and/or use **$** (dollar sign character) to indicate that the search should end at the end of the line.

5. If you want each file listed as it is backed up, press the Tab key once to change the default value of `List files as they are backed up?` to **yes**. Otherwise, you will see a percentage–completed progress message while the backup is created.
6. The **image.data** file contains information about the sizes of all the file systems and logical volumes in your rootvg. If you modified the **image.data** file and don't want a new file created, press the Tab key once to set the value to **no** for `Generate new /image.data file?` .
7. If you chose to create a bootable tape and you want to expand the system's /**tmp** file system (if required by the backup program), press the Tab key once to change the value for **EXPAND /tmp if needed?** field to `yes` .
8. If the tape drive you are using provides packing (or compression), set the **Disable software packing of backup?** field to `yes` .
9. If you chose tape as the backup medium, select the **Number of BLOCKS to write in a single output** field and enter the number of blocks to write for the tape device used to create the backup image, or leave the field blank to accept the system default.
10. If you chose file as the backup medium, press the Enter key. If you chose tape as the backup medium, insert the first blank backup tape into the drive and press the Enter key.
11. The COMMAND STATUS screen appears, showing status messages while the system makes the backup image.

    If you chose tape as the backup medium, the system may prompt you to insert the next tape during the backup by displaying a message similar to the following:

    ```
    Mount next Volume on /dev/rmt0 and press Enter.
    ```

    If this message appears, remove the tape and label it, including the BOS version number. Then insert another tape and press Enter.

    When the backup process finishes, the **COMMAND:** field changes to **OK**.
12. Press F10 to exit SMIT when the backup completes.
13. If you chose tape as the backup medium, remove the last tape and label it. Write–protect the backup tapes.
14. Record any backed up root and user passwords. Remember, these passwords will be active if you use the backup to either restore this system or install another system.

You have created the backup of your root volume group (rootvg). If you created bootable tapes, these tapes can be used to start your system if for some reason you cannot boot from hard disks.

Using SMIT to Backup System to CD

1. Enter the **smit mkcd** command. You will be prompted to answer whether you will be using an existing mksysb image or not.
2. Enter the name of the CD–R device. This can be left blank if **Create the CD now?** field is set to `no` .
3. If you are creating a mksysb image, you will have to select the mksysb image creation options. These are as follows:
   - **Create map files?**
   - **Exclude files?**

   Refer to steps 3 and 4 of 3Using SMIT to Back Up This System to Tape/File. The **mkcd** command will always call the **mksysb** command with the flags to extend /**tmp**, to create an **image.data** file, and to use software packing for the backup.

4. Enter the file system/directory in which to store the mksysb image. This can be a file system you created in the rootvg, in another volume group, or NFS mounted file system. If left blank, the **mkcd** command will create the file system and remove it when the command completes.
5. In the next two fields, you can enter the file systems and directories where the CD file system and CD images will be stored. These can be file systems you created in the rootvg, in another volume group, or NFS mounted file systems. If these fields are left blank, the **mkcd** command will create these file systems, and remove them at command completion, unless otherwise indicated in steps 8 or step 9 of this procedure.
6. If you did not enter any information in the file systems' fields, you can select to have the **mkcd** command either create these file systems in the rootvg, or in another volume group. If the default of rootvg is chosen and a mksysb image is being created, the **mkcd** command will add the file systems to the exclude file and will call the mksysb with the exclude files option **–e**.
7. Do you want the CD to be bootable? If yes, this CD will be bootable on the source system on which it was created. If not, you will have to boot from a product CD at the same version/release/maintenance level, and then select to install the system backup from the system backup CD.
8. If the **Remove final images after creating CD?** field is changed to `no` , then the file system selected in step 5 for the CD images will remain after the CD has been recorded.
9. If the **Create the CD now?** field is changed to `no` , then the file system selected in step 5 for the CD images will remain and the CD will not be created.
10. If an Install bundle file is to be used, enter the full path name to the bundle file. The **mkcd** command will copy the file into the CD file system. The user is responsible for either having the bundle file already specified in the **bosinst.data** file, **BUNDLES** field, in the mksysb image, or must use a user–specified **bosinst.data** file that has the **BUNDLES** field set appropriately. When this option is used to have the bundle file placed on the CD, then the location in the **BUNDLES** field of the **bosinst.data** file must be as follows:

    `/../usr/sys/inst.data/user_bundles/`*`bundle_file_name`*

11. Additional packages can be placed on the CD, by entering the name of a file containing a list of packages in the **File with list of packages to copy to CD** field. The format of this file should be 1 package name per line.

    If you are having a bundle installed after the mksysb image is restored, by following the directions in step 10, then you can use this option to have those packages listed in the bundle available on the CD. If this option is used, then the next option must also be used.

12. The location of install images, that are to be copied to the CD file system, must be entered for **Location of packages to copy to CD**. This field is required if additional packages are to be placed on CD in step 11. The location can be a directory or CD device.
13. The full path name to a customization script can be given in the **Customization script** field. If given, the **mkcd** command will copy the file to the CD file system. It is the user's responsibility to either have the **CUSTOMIZATION_FILE** field already set in the **bosinst.data** file in the mksysb image, or use a user–specified **bosinst.data** file with the **CUSTOMIZATION_FILE** field set. The **mkcd** command will copy this file to the **RAM** filesystem, therefore the path in the **CUSTOMIZATION_FILE** field must be:

    `/../`*`filename`*

14. You may use your own **bosinst.data** file rather than the one in the mksysb image. You may do this by entering the full path name of your **bosinst.data** file in the **User supplied bosinst.data file** field.
15. To turn on debug for the **mkcd** command, set **Debug output?** to `yes` . The debug will go to the **smit.log**.
16. You may use your own **image.data** file rather than the **image.data** file in the mksysb image, by entering the full path name of your **image.data** file for the **User supplied image.data file** field.

Using SMIT to Create a Generic Backup CD

1. Enter the **smit mkcdgeneric** command.
2. Enter the name of the CD–R device. This can be left blank if the **Create the CD now?** field is set to `no` .
3. Enter the full path name of the mksysb image. Only previously created mksysb images can be used. This path will not create a mksysb image for you.
4. Enter the location of the installation images that are to be copied to the CD file system in the **Location of packages to copy to CD** field. This field is required to copy devices and kernel packages to the *generic* CD. Additional software packages can be copied onto *generic* CD, if a list of packages is provided, in step 10. The location can be either a directory or CD device.
5. In the next two fields you can enter the file systems for the CD file system and CD images. These can be file systems you created in the rootvg, in another volume group, or NFS mounted file systems. If left blank, the **mkcd** command will create these file systems, and remove them at command completion, unless otherwise indicated in steps step 7 or step 8.
6. If you left the file systems' fields blank, you can select to have the **mkcd** command either create these file systems in the rootvg, or in another volume group.
7. If the **Remove final images after creating CD?** field is changed to `no` , then the file system selected in step 5 for the CD images will remain after the CD has been recorded.
8. If the **Create the CD now?** field is changed to `no` , then the file system selected in step 5 for the CD images will remain and the CD will not be created.
9. If an Install bundle file is to be used, enter the full path name to the bundle file. The **mkcd** command will copy the file into the CD file system. The user is responsible for either having the bundle file already specified in the **bosinst.data** file, **BUNDLES** field, in the mksysb image, or must use a user–specified **bosinst.data** file that has the **BUNDLES** field set appropriately. If this option is used to have the bundle file placed on the CD, then the location in the **BUNDLES** field of the **bosinst.data** file must be as follows:

   `/../usr/sys/inst.data/user_bundles/`*`bundle_file_name`*`.`

10. Additional packages can be placed on the CD, by entering the name of a file, which contains a list of packages, for the **File with list of packages to copy to CD** field. The format of this file should be 1 package name per line. If you are having a bundle installed after the mksysb is restored, follow the directions in step 9 to use this option to have the packages listed in the bundle available on the CD.
11. The full path name to a customization script can be given for the **Customization script** field. If given, the **mkcd** command will copy the file to the CD file system. It is the users responsibility to either have the **CUSTOMIZATION_FILE** field already set in the **bosinst.data** file in the mksysb image, or use a user–specified **bosinst.data** file with this field set. The **mkcd** command will copy this file to the **RAM** filesystem. The path in the **CUSTOMIZATION_FILE** field must be:

`/../filename`.

12. You may use your own **bosinst.data** file rather than the **bosinst.data** file in the mksysb image, by entering the full path name of your **bosinst.data** file for the **User supplied bosinst.data file** field.
13. To turn on debug for the **mkcd** command, set the **Debug output?** field to **yes**. The debug output will go to the **smit.log**.
14. You may use your own **image.data** file rather than the **image.data** file in the mksysb image, by entering the full path name of your **image.data** file for the **User supplied image.data file** field.

To Verify a System Backup

Use either Web-based System Manager or SMIT to list the contents of a mksysb image on tape or CD. The contents list verifies most of the information on the tape, but does not verify that the backup media can be booted for installations. The only way to verify that the boot image(s) on a mksysb tape or CD function properly is by booting from the media. To verify all the boot images on a *generic* CD, you should try to boot from the CD on each different platform on which you are installing the backup.

Using Web-based System Manager

To use the Web-based System Manager application to verify a backup tape or CD, enter the **wsm backup** fast path.

Using SMIT

Enter the **smit lsmksysb** fast path. The List Files in a System Image screen appears.

Note: Do not press the Enter key until you finish providing values in the entry fields.

To Back Up a User Volume Group

Use either Web-based System Manager or SMIT to back up user volume groups. Starting with AIX Version 4.3.3 you can back up a user volume group to CD.

Using Web-based System Manager

To use the Web-based System Manager application to back up a user volume group to tape or file, enter the **wsm lvm** fast path.

To use the Web-based System Manager application to back up a user volume group to a CD, enter the **wsm backup** fast path, and then double–click on the **System Backup to CD–R TaskGuide** icon.

Using SMIT

If you wish to back up a user volume group to tape or file, enter the **smit savevg** fast path. Back up a user volume group by entering the **smit savevgcd** fast path to back up to CD.

When the Save a Volume Group screen appears, use the steps for backing up the root volume group as a guide for backing up user volume groups. There is one exception to this procedure. If you want to exclude files in a user volume group from the backup image, create a file named /**etc**/**exclude.***volume_group_name*, where *volume_group_name* is the name of the volume group you want to backup. Next, edit /**etc**/**exclude.***volume_group_name* and enter the patterns of file names that you do not want included in your backup image. The patterns in this file are input to the pattern matching conventions of the **grep** command to determine which files will be excluded from the backup.

Introduction to Backups on CD

Creating a backup CD is new function that has been added to AIX Version 4.3.3. It is similar to making a backup tape for your personal use, but with some noticeable differences.

You must obtain the hardware and software necessary to create a CD. IBM does not sell or support the software or hardware that is used to create CD's. The new command for this process, **mkcd**, requires that you already have the software to create a CD–ROM file system (Rock Ridge) and to "burn" or write the CD. Some of the hardware and software that was tested with this procedure includes:

Software	Hardware
GNU & Free Software Foundation, Inc. cdrecord version 1.8a5 mkisofs version 1.5	Yamaha CRW4416SX Ricoh MP6201SE 6XR–2X Panasonic Cw–7502–B
Jodian Systems and Software, Inc. CDWrite version 1.3 mkcdimg version 2.0	Tested on all of above
Youngminds, Inc. MakeDisc version 1.3–Beta2	CD Studio

For more information about CD–R drives and CD–R creation software, refer to the following file:

```
/usr/lpp/bos.sysmgt/README.oem_cdwriters
```

Once you decide what hardware and software you want to use and obtain it, you will need to create the appropriate links to scripts that have been written that will work with the **mkcd** command. For example, if you are using Jodian software, then you will need to create the following links:

```
ln –s /usr/samples/oem_cdwriters/mkrr_fs_jodian /usr/sbin/mkrr_fs
ln –s /usr/samples/oem_cdwriters/burn_cd_jodian /usr/sbin/burn_cd
```

In order to run the **mkcd** mkcd command, you will need extra working space. A separate file system or directory is required for each of the following:

- storing a **mksysb** or **savevg** image
- storing the CD file system contents
- storing the CD images before they are recorded

The **mkcd** command will create the following file systems if they are not already present, or if alternate file systems or directories have not been given:

```
/mkcd/mksysb_images
/mkcd/cd_fs
/mkcd/cd_images
```

The space used in these file systems will only be temporary (unless the **–R** or **–S** flag is specified to save the images). If the **mkcd** command creates the file systems, it will remove them. Each file system or directory could require over 640 megabytes. The **/mkcd/cd_fs** directory will need 640 megabytes. The **/mkcd/mksysb_images** directory's space requirement will depend on the size of the **mksysb** image that will be created. The **mkcd** process will attempt to calculate this space and verify that adequate space is available before starting the **mksysb** image. The **/mkcd/cd_image** directory will be need at least 640

megabytes of space. If the **–R** or **–S** flags are used to specify not removing the images, and there are multiple volumes required, then more space will have to be provided.

If you don't have space on your machine, you may want to NFS mount space from another server system, however, the file systems must be writeable. You could create a /**mkcd** file system that is very large (1.5 gig) and then create subdirectories **cd_fs**, **mksysb_images** and **cd_images** under / **mkcd**. Then /**mkcd** could be mounted on to the clients when they wanted to create a backup CD on their systems.

Personal and Generic backup CD's

There are two types of backup CD's that can be created. The first is what we call a "personal" backup CD. This type is similar to a backup tape, in that it will only boot and install the machine on which it was created.

The second type of CD is a "generic" backup CD. This type of backup can be used to boot any machine running the AIX operating system. It contains 3 boot images and all the device and kernel packages necessary to install any system. The mksysb image that is stored on the CD does not require that all the devices be installed in it, because the install process will install the needed devices for that machine from the packages on the CD. This type of backup CD might be used to install (clone) a large number of machines in a customer's environment. This is particularly convenient when each machine in the system environment needs to have the same image installed, but may not all have the same hardware configuration.

There are SMIT (**smit mkcd**) and Web-based System Manager Backups (**wsm backup**) interfaces available for the **mkcd** command. The Web-based System Manager Back Up to CD TaskGuide will help you through the required steps and will even create the links to the OEM scripts for you.

Another option available with the **mkcd** command is the ability to create a **savevg** CD. This CD has a copy of a non–rootvg volume group on it, and is useful for volume groups that contain user data. At this time, the **mkcd** command only supports saving one volume group to a CD at a time. However, if your **rootvg** image and **savevg** image were small enough to fit on one CD, then you could save them both by taking advantage of the **–l** (stacklist) flag. This flag gives a list of images to copy to the CD, and the **–z** (customization_script) flag. If you make a copy of a non–rootvg volume group ahead of time, and then write a script that calls restvg, then your non–rootvg, would be restored to hdisk2 at the end of the install of rootvg. For example:

```
restvg -d /SPOT/usr/sys/inst.images/savevg_image hdisk2
```

This procedure would only be recommended if you knew that you wanted to restore the non–rootvg volume group every time you installed. Otherwise, you might just want to store it on the CD, then use **restvg** (**smit restvg** or **wsm lvm**) to restore it after reboot. The **restvg** command will be able to restore from CD if the name of the image is **savevg_image**.

Chapter 10. Alternate Disk Installation

Alternate disk installation, available in AIX Version 4.3, allows installing the system while it is still up and running, allowing install or upgrade down time to be decreased considerably. It also allows large facilities to manage an upgrade because systems can be installed over a longer period of time while the systems are still running at the same version. The switch over to the new version can then happen at the same time.

Alternate disk installation can be used in one of two ways:

- Installing a **mksysb** image on another disk, on page 10-1
- Cloning the current running **rootvg** to an alternate disk., on page 10-2

Both of these functions can become important in environments where down time is critical (sometimes called 7 X 24 environments).

Alternate mksysb Disk Install

Alternate **mksysb** install involves installing a **mksysb** image that has already been created from a system, onto an alternate disk of the target system. The alternate disk or disks cannot contain a volume group. In this case, the associated volume group is **altinst_rootvg** (see Phased Alternate Disk Installation)., on page 10-2 The **mksysb** image (AIX Version 4.3 or later) would be created on a system that was either the same hardware configuration as the target system, or would have all the device and kernel support installed for a different machine type or platform, and/or different devices. The installed device and kernel support would be:

- **devices.***
- **bos.mp**
- **bos.up**
- **bos.64bit**, if necessary

When the **alt_disk_install** command is run, the **image.data** file from the **mksysb** image is used by default (unless a customized **image.data** is given) to create the logical volumes and file systems. The prefix **alt_** is added to the logical volume names, and the file systems are created with a prefix of /**alt_inst**. For example, `hd2` would be created as **alt_hd2**, and its file system, /**usr**, would be created as /**alt_inst**/**usr**. These names will be changed back to their original names at the end of the alternate disk installation process.

The **mksysb** is then restored into the alternate file system. A prepopulated boot image is then copied to the boot logical volume of the **altinst_rootvg**, and the boot record of the boot disk is modified to allow booting from the disk.

At this point, a script can be run to allow for any customization before the system is rebooted. The alternate file systems will still be mounted as /**alt_inst**/***real_file_system*** (for example: /**alt_inst**/**usr**, /**alt_inst**/**home**). Files can be accessed at this point, but nothing can be installed into the alternate file system because the kernels and libraries of the **mksysb** image do not match those of the running system.

After the optional script is run, the file systems are unmounted, and the logical volume and file system names are changed to match the **image.data** file's names (for example, **alt_inst_hd6** is changed to **hd6** in the volume group descriptor area). The logical volumes are exported from the Object Data Manager (ODM), but the **altinst_rootvg** is only varied off. It is left in the ODM as a placeholder so the disk will not be accidentally overwritten. The default action of **alt_disk_install** would then be to set the bootlist so that the next time the

system boots, it will boot from this newly installed volume group. This default action can be turned off. If specified, the system will reboot at this point, and the system will reboot from the new **rootvg**. The boot process proceeds to a certain point, with the new **rootvg**'s file systems mounted, and the **bosboot** command is called to rebuild a "normal" boot logical volume. The system then reboots.

Once the system has booted from the new **rootvg**, the "old" **rootvg** does not appear in logical volume manager (LVM) listings, unless the **alt_disk_install** version is 4.3.2 or later.

Note: If you are using **alt_disk_install** Version 4.3.2 or later:

After rebooting from the new alternate disk, the former **rootvg** volume group will show up in an **lspv** listing as old_rootvg, and will include all disk(s) in the original **rootvg**. This former **rootvg** volume group will be set to *NOT varyon* at reboot, and should ONLY be removed with the **–X** flag. For example:

```
alt_disk_install -X old_rootvg
```

If a return to the original **rootvg** is necessary, the **bootlist** command is used to change the bootlist to reboot from the original **rootvg**.

Note: If you are using **alt_disk_install** Version 4.3.2 or later:

If it is unclear which disk is the boot disk for a specific volume group, the **–q** flag can be used to determine the boot disk. This can be useful when a volume group is comprised of multiple disks and a change in the bootlist is necessary.

Alternate Disk rootvg Cloning

Cloning the **rootvg** to an alternate disk can have many advantages. One advantage is having an online backup available, in case of disaster. Keeping an online backup would require an extra disk or disks to be available on the system. Another benefit of **rootvg** cloning is in applying new maintenance levels or updates. A copy of the **rootvg** is made to an alternate disk, then updates are applied to that copy. The system runs uninterrupted during this time. When it is rebooted, the system will boot from the newly updated **rootvg** for testing. If updates cause problems, the **old_rootvg** can be retrieved by simply resetting the bootlist and rebooting.

When the **alt_disk_install** command is called, it will, by default, create an **image.data** file based on the current **rootvg**'s configuration. A customized **image.data** file can be used. An alternate **rootvg** (**altinst_rootvg**) is then created, and the logical volumes and file systems are then created with the **alt_inst** prefix. A backup file list is then generated from the **rootvg**, and if an **exclude.list** file is given, those files will be excluded from the list. The final list is then copied to the **altinst_rootvg**'s file systems.

At this point, if specified, **installp** will install updates, fixes, or new filesets into the alternate file system. Next, **bosboot** will create a boot logical volume on the alternate boot disk.

If a customization script is specified, it will run at this point. The file systems are then unmounted, and the logical volumes and file systems are renamed. The logical volume definitions are exported from the system to avoid confusion with identical ODM names, but the **altinst_rootvg** definition will be left as an ODM placeholder.

By default, the bootlist will be set to the new cloned **rootvg** for the next reboot.

Phased Alternate Disk Installation

Beginning with AIX Version 4.3.1, alternate disk installation can be performed in stages. The installation itself is broken down into three phases. The default is to perform all three phases in the same invocation. The phases are:

Phase 1	Creates the **altinst_rootvg** volume group, the **alt_** logical volumes, and the /**alt_inst** file systems. Also restores the **mksysb** or **rootvg** data.
Phase 2	Runs any specified customization script. For cloning only, installs updates, new filesets, fixes, or bundles. Also copies a **resolv.conf** file (if specified) and necessary files to remain a NIM client (if specified).
Phase 3	Unmounts the /**alt_inst** file systems, renames the file systems and logical volumes, removes the **alt_** logical volume names from ODM, and varies off the **altinst_rootvg**. It also sets the bootlist and reboots (if specified).

As an alternative to running all three phases, the phases can be executed in the following ways:

- Each phase separately, or
- Phases 1 and 2 together, or
- Phases 2 and 3 together (Phase 2 can be run multiple times before Phase 3 is run).

You must run Phase 3 to obtain a usable **rootvg**. Running Phases 1 and 2 will leave the /**alt_inst** file systems mounted. Any time during the phase process, before rebooting, the **altinst_rootvg** can be removed, and disk cleanup will occur, using the following command:

alt_disk_install –X

Data Access Between the Original rootvg and the New Alternate Disk

Note: If you are using **alt_disk_install** Version 4.3.2 or later:

If data access is necessary between the original rootvg and the new alternate disk, a volume group ”wake–up” can be accomplished, on the non–booted volume group. The ”wake–up” will put the volume group in a **post alt_disk_install** Phase 1 state. For example, the /**alt_inst** file systems will be mounted.

The volume group that will experience the ”wake–up” will be renamed **altinst_rootvg**.

Limitation

The running system’s version of AIX must be greater than or equal to the AIX version of the volume group that will undergo the ”wake–up”. This may mean that it’s necessary to boot from the **altinst_rootvg** and ”wake–up” the **old_rootvg**. For example, an alternate disk is created from an **alt_disk_install** 4.3.0 mksysb, on a AIX Version 4.1.5 system. it will be necessary to boot from the 4.3.0 alternate disk and ”wake–up” the 4.1.5 **old_rootvg** volume group, in order to access data between the two volume groups.

This limitation is caused by a jfs (journaled file system) log entry incompatibility. It is possible to ”wake–up” a volume group that contains a greater AIX version, but the volume group could not have ever been the system **rootvg**. If this was true, the volume group would have made jfs log entries that could not be interpreted by an older AIX version **rootvg**, when the volume group was experiencing a ”wake–up”.

The alt_disk_install command will not allow a ”wake–up” to occur on a volume group with a greater AIX version, unless the **FORCE** environment variable is set to **yes**.

Warning: If a FORCE ”wake–up” is attempted on a volume group that contains a version of AIX later than the running operating system, and the ”waking” volume group has been a system **rootvg**, errors will occur.

When data access is no longer needed, the volume group can be put to sleep.

Note: The volume group that has experienced a ”wake–up” MUST be put–to–sleep before it can be booted and used as the **rootvg**.

Filesets to Install

bos.alt_disk_install.boot_images	Must be installed for alternate disk **mksysb** installations.
bos.alt_disk_install.rte	Must be installed for **rootvg** cloning and alternate disk **mksysb** installations.

Installing to an Alternate Disk using Web–based System Manager

The graphical interface provides access to Web-based System Manager Software options for installing a mksysb to an alternate disk and for cloning a rootvg to the alternate disk.

See ”Using Web-based System Manager” for further information about using the Web-based System Manager graphical interface.

To install a mksysb to an alternate disk:

1. Start the Web-based System Manager by entering:

   ```
   wsm software
   ```

2. After the Software container displays, select **Software** from the menu.
3. From the pulldown, select **Alternate Disk Install—>Install Mksysb on an Alternate Disk**.

To view extended help for the Web-based System Manager Software tasks,select **Contents** from the Help menu.

To clone the rootvg to an alternate disk:

1. Start the Web-based System Manager application by entering:

   ```
   wsm software
   ```

2. After the Software container displays, select **Software** from the menu.
3. From the pulldown, select **Alternate Disk Install—>Clone the Rootvg to an Alternate Disk**.

To view extended help for the Web-based System Manager Software tasks, select **Contents** from the Help menu.

Running Alternate Disk Install

To run alternate disk **mksysb** install:

1. At the system prompt, enter the SMIT fast path:

   ```
   smit alt_mksysb
   ```

2. Type or select values in the entry fields. Press Enter after making all desired changes.

To run alternate disk **rootvg** cloning:

1. At the system prompt, enter the SMIT fast path:

   ```
   smit alt_clone
   ```

2. Type or select values in the entry fields. Press Enter after making all desired changes.

Examples

1. To clone the **rootvg** running 4.1.4.0 to `hdisk1` and update that clone with the latest maintenance level 4.1.5.0 that is on `cd0`, run the following command:

   ```
   alt_disk_install -C -b update_all -l /dev/cd0 hdisk1
   ```

   In SMIT, use the **smit alt_clone** fast path and select **hdisk1** from the listing for Target Disk(s) to install, select the **update_all** bundle from the listings in the `Bundle to Install` field, and /**dev**/**cd0** from the listing in the `Directory or Device with images` field.

2. To clone the **rootvg** running 4.2.0 to `hdisk3`, then update to the latest fixes which are mounted from another system on `/421fixes`, and run a customized script named /**tmp**/**finish_alt_install**, run the following command:

   ```
   alt_disk_install -C -b update_all -l /421fixes \
   -s /tmp/finish_alt_install hdisk3
   ```

   In SMIT, use the **smit alt_clone** fast path and select **hdisk3** from the listing for Target Disk(s) to install, select the **update_all** bundle from the listings in the Bundle to Install field, enter `/421fixes` in the `Directory or Device with images` field, and type in `/tmp/finish_alt_install` in the `Customization script` field.

3. To install a 4.3 **mksysb** tape that was created from a machine with the same hardware configuration as the target, to `hdisk1`, run the following command:

   ```
   alt_disk_install -d /dev/rmt0 hdisk1
   ```

   In SMIT, use the **smit alt_mksysb** fast path and select **hdisk1** from the listing for Target Disk(s) to install field and select /**dev**/**rmt0** from the listing for Device or image name field.

4. To install a 4.3 **mksysb** image that is NFS mounted on file system /**mksysbs** to the alternate disk `hdisk2` using a customized **image.data** file and an exclude file containing **^./tmp/**, enter the following command:

   ```
   alt_disk_install -d /mksysbs/my_43P_mksysb -i
   /mksysbs/my_43p_image.data \
   -e /mksysbs/my_exclude_file hdisk2
   ```

   Using the **^./tmp/** pattern will not backup files in the /**tmp** directory, but will backup files in /**var**/**tmp**.

   Note: All files are backed up relative to the current directory. This directory is represented by a **.** (dot character). If it is important that the search match the string at the beginning of the line when excluding a file or directory, it is necessary to use a **^.** (caret followed by a dot character) as the first part of the search string, followed by the filename or directory to be excluded. The proper form is shown below:

   ```
   ^./ filename
   ```

   If the filename or directory being excluded is a substring of another filename or directory, use a **^.** (caret followed by a dot character) for the search to start at the beginning of the line and the **$** (dollar symbol) to have the search finish at the end of the line.

   In SMIT, use the **smit alt_mksysb** fast path and select **hdisk2** in the Target Disk(s) to install field. Next, enter /**mksysbs**/**my_43P_mksysb** in the Device or image name field, /**mksysbs**/**my_43p_image.data** in the image.data file field, and /**mksysbs**/**my_exclude_file** in the Exclude list field.

5. To ”wake–up” an original rootvg, after booting from the new alternate disk, run the following command:

```
alt_disk_install -W hdisk0
```

The following example illustrates the displayed output you might see when running the command discussed above:

```
# lspv
hdisk0          000040445043d9f3    old_rootvg
hdisk1          00076443210a72ea    rootvg

# alt_disk_install -W hdisk0

# lspv
hdisk0          000040445043d9f3    altinst_rootvg
hdisk1          00076443210a72ea    rootvg
```

At this point, you will find the **altinst_rootvg** volume group varied–on and the /**alt_inst** file systems will be mounted.

6. To ”put–to–sleep” a volume group that had experienced a ”wake–up” enter the following command:

```
alt_disk_install -S
```

The following example illustrates the displayed output you might see when running the command discussed above:

```
# lspv
hdisk0          000040445043d9f3    altinst_rootvg
hdisk1          00076443210a72ea    rootvg

# alt_disk_install -S

# lspv
hdisk0          000040445043d9f3    altinst_rootvg
hdisk1          00076443210a72ea    rootvg
```

The **altinst_rootvg** is no longer varied–on and the /**alt_inst** file systems are no longer mounted. If it’s necessary for the **altinst_rootvg** volume group name to be changed back to **old_rootvg**, this can be done with the **–v** flag.

Troubleshooting

See Acting on System and Error Messages, on page 12-1 , if you receive either of the following two error messages:

- 0505–113 alt_disk_install: No target disk name provided.
- 0505–117 alt_disk_install: Error restoring image.data file from mksysb image.

Other Problems

Symptom: You are trying to install the **bos.alt_disk_install.rte** fileset on a Version 4.1 system, and **installp** is giving an error that requisites are not being met, but it does not indicate what the requisites are.

This problem is a Version 4.1 **installp** limitation in not reporting the requisites. The **bos.alt_disk_install.rte** requires the **bos.sysmgt.sysbr** (the **mksysb** fileset) to be installed at the same level as the running system. Therefore, if you are attempting to

install on a Version 4.1.5 system, then **bos.sysmgt.sysbr 4.1.5.0** should also be installed.

Symptom: You have run the **alt_disk_install** command or used the SMIT menus to either clone or install a **mksysb** image on an alternate disk. However, you now want to remove the definition so you can use the disk to run **alt_disk_install** again or use the disk for another purpose.

Action: *Do not run* **exportvg**. The **exportvg** examines the logical volumes on the disk (now called by their rootvg names: **hd1**, **hd2**, **hd3**, and so on) and tries to remove their corresponding entries from the /**etc/filesystems** file. This action will remove the real file system stanzas from your running system and will cause boot problems if you reboot with the missing stanzas.

Use the **alt_disk_install –X** command to remove the **altinst_rootvg** name from the database. This will remove only the ODM information from the CuDv database, so the **lspv** command will show the disk(s) as no longer belonging to **altinst_rootvg**. It will also reset your bootlist to the boot disk where the hd5 boot logical volume resides. You can still boot from the **altinst_rootvg**, since the volume group, logical volume, and file system information remain on the disk. However, you will need to set your bootlist to the **altinst_rootvg** boot disk.

Chapter 11. Troubleshooting

This chapter suggests solutions for typical installation problems. Refer to Acting on System and Error Messages, on page 12-1 and *AIX Messages Guide and Reference* for information about error messages that appear during an installation.

This chapter includes:

Creating Bootable Tapes

Following is the procedure for creating a bootable tape, which you might use to maintain your AIX Version 4.3 Base Operating System (BOS). The tape works only with a copy of BOS that is the same version as the BOS used to create them. Earlier versions of BOS required bootable diskettes. To create bootable diskettes for an earlier version, refer to the documentation for that version.

1. To create the /**bosinst.data** file, enter:

   ```
   cp /var/adm/ras/bosinst.data /bosinst.data
   ```

   or enter:

   ```
   cp /usr/lpp/bosinst/bosinst.template /bosinst.data
   ```

2. To create the /**image.data** file, enter:

   ```
   mkszfile
   ```

   Note: This file is created by the **mksysb** command.

3. Put a tape in the drive.

4. Make sure the Tape Device Block size is set to 512.

   To check the Tape Device Block size, enter:

   ```
   tctl -f /dev/rmtTapeDriveName
   status.
   ```

   where `rmt`*`TapeDriveName`* is the name of the tape drive you are using (for example, `rmt0`)

   To change the Tape Device Block size, enter:

   ```
   chdev -l rmtTapeDriveName -a block_size=512
   ```

5. Make sure the tape is rewound. To rewind the tape, enter:

   ```
   tctl -f/dev/rmtTapeDriveName rewind
   ```

6. To create the boot image on the tape, enter:

   ```
   bosboot -ad /dev/rmtTapeDriveName.1
   ```

7. To create the BOS Install/Maintenance image on the tape, enter:

   ```
   mkinsttape /dev/rmtTapeDriveName.1
   ```

8. If the Tape Device Block size was changed in step 4, be sure to set it back to its previous size. To change the Tape Device Block size, enter:

   ```
   chdev -l rmtTapeDriveName -a block_size=BlockSize
   ```

   where *BlockSize* is the previous Tape Device Block size.

Accessing a System That Will Not Boot

The procedure in this section describes how to access a system that will not boot from the hard disk. Read Troubleshooting an Installation from a System Backup, on page 11-8 for instructions if a **mksysb** backup tape fails to boot.

This procedure enables you to get a system prompt so that you may attempt to recover data from the system or perform corrective action that will enable the system to boot from the hard disk.

Notes:

1. This procedure is intended only for experienced users who have knowledge of how to boot or recover data from a system that is unable to boot from the hard disk. Most users should not attempt this procedure but instead should follow local problem–reporting procedures.
2. This procedure is not intended for users who have just completed a New Installation, because the system will not contain data that needs to be recovered. If you are unable to boot from the hard disk after completing a New Installation, follow your local problem–reporting procedures.

The following steps summarize the procedure for accessing a system that will not boot.

1. Boot the system from Volume 1 of the BOS CD–ROM or stacked bootable system installation tape.
2. Select maintenance options.
3. Recover data or perform corrective action using the system prompt.

Prerequisites

- Your system cannot be booted from the hard disk.
- All hardware is installed.
- AIX Version 4.3 Base Operating System (BOS) is installed.
- Your system unit is set to Off.
- Obtain the system key for the key lock (if present) on your system unit.

To Access the System

Use this procedure if you are unable to boot from the hard disk. The beginning of this procedure is similar to the one you used to install the Base Operating System. You will, however, be using the maintenance screens instead of the installation screens to complete this procedure. The maintenance screen illustrations in this procedure are provided as examples only. The actual online screens may be somewhat different in appearance.

1. Turn the system key (if present) to the Service position.
2. Turn on all attached external devices, such as terminals, CD–ROM drives, tape drives, monitors, and external disk drives *before* turning on the system unit. Do not turn the system unit on until step 5. Turning on the external devices first is necessary so that the system unit can identify them during the startup (boot) process.
   - If you are booting from a network device, refer to *AIX Version 4.3 Network Installation Management Guide and Reference*.
   - If you are not booting from a network device, go to step 3.
3. Insert Volume 1 of the installation media into the tape or CD–ROM drive. Some CD–ROM drives have a removable disc caddy, while others have a sliding drawer. If the CD–ROM drive on your system has a sliding drawer, place the CD–ROM in the drawer and push the drawer in. If the CD–ROM drive on your system does not have a sliding

drawer, insert the CD–ROM into the disc caddy and then insert the caddy into the CD–ROM drive.

Notes:

a. You may find that on specific hardware, the tape drive door will not open while the system unit is turned off. If you have trouble opening the tape drive door during installation, use the following procedure:

   a. Turn the system unit on.

   b. Insert the AIX Version 4.3 BOS tape (insert Volume 1 if you received more than one volume).

   c. Turn the system unit off and wait 30 seconds.

b. On some models that have a door to the tape drive, there may be a waiting period of up to three minutes before the tape drive door opens after you have pressed the button to open the tape drive. Some models also require that the button for the tape drive door be held in the pressed position for a few seconds before the tape drive door will open.

c. On some models, the eject button must be pressed for at least 2 seconds to eject a CD–ROM that is already in the disc caddy.

4. If you are not using an ASCII terminal, skip to step 5. If you are using an ASCII terminal, set the communications options as follows:

   – Line Speed (baud rate) = 9600
   – Word Length (bits per character) = 8
   – Parity = no (none)
   – Number of Stop Bits = 1
   – Interface = RS–232C (or RS–422A)
   – Line Control = IPRTS

   Set the keyboard and display options as follows:

   – 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

   Note: If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the on–screen instructions to set these options. If you are using some other ASCII terminal, refer to the appropriate documents for information

about how to set these options. Some terminals have different option names and settings than those listed here.

5. Turn the system unit power switch to the On position. The system begins booting from the installation media. If your system is booting from tape, it is normal for the tape to move back and forth. After several minutes, `c31` is displayed in the LED.

   If you have more than one console, each terminal and direct–attach display device (or console) may display a screen that directs you to press a key to identify your system console. A different key is specified for each terminal displaying this screen. If this screen is displayed, then press the specified key on the device to be used as the system console. The system console is the keyboard and display device used for installation and system administration. Press a key on only one console.

6. Enter option `3` to select **Start Maintenance Mode for System Recovery** from the Welcome to the Base Operating System Installation and Maintenance screen when it is displayed.

   Note: If you customized the **bosinst.data** file in your installation media to specify a nonprompted installation, the installation and maintenance screens will not be displayed. The system will instead reboot from the installation media using the settings already defined in the **bosinst.data** file. To access the installation and maintenance screens, you need to override the nonprompted mode. An opportunity to do this occurs when three zeros are displayed on the screen. When you observe the three zeros, enter `000` (zeros) and then the Enter key at the terminal.

```
Welcome to 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 ?
Choice:
```

You can select `88` to display help on this or any subsequent screen.

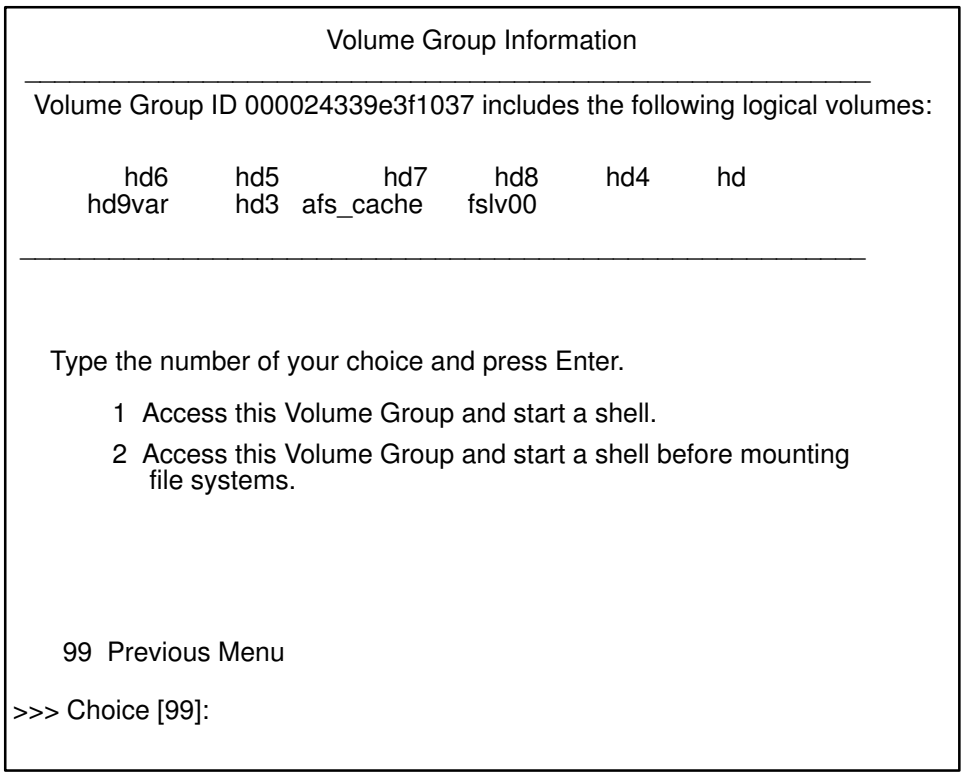
After you have selected the **Start Maintenance Mode for System Recovery** option, the Maintenance screen is displayed.

```
                              Maintenance

    Type the number of your choice and press Enter.

>>>  1  Access a Root Volume Group
       2  Copy a System Dump to Removable Media
       3  Access Advanced Maintenance Functions
       4  Install from a System Backup



      88  Help ?
      99  Previous Menu

>>> Choice [1]:
```

7. Select option `1` , **Access a Root Volume Group**, from the Maintenance screen. The Warning screen is displayed.
8. Read through the information displayed on the Warning screen. When you are ready to continue, type `0` and press Enter. The Access a Root Volume Group screen is displayed.

```
                        Access a Root Volume Group

  Type the number for a volume group to display logical volume information
  and press Enter.

  1)  Volume Group 00002433a01d4c83 contains these disks:
        hdisk3   670  00–07–00–10          hdisk4   670  00–07–00–20
        hdisk5   670  00–07–00–30

  2)  Volume Group 00002433c9a746ca contains these disks:
        hdisk0   857  00–08–00–10

  3)  Volume Group 000024339e3f1037 contains these disks:
        hdisk1   857  00–08–00–00

  4)  Volume Group 00002433c880188a contains these disks:
        hdisk2   670  00–07–00–00


>>> Choice [3]:
```

9. Select the option for the root volume group whose logical volume information you want to display. The Access a Root Volume Group screen lists all of the volume groups (root and otherwise) on your system. After entering your selection, the Volume Group Information



Note: Reviewing the disk and location code information on the Volume Group Information screen enables you to determine whether the volume group you selected was the root volume group. You can return to the Access a Root Volume Group screen if the choice you made was not the root volume group. If you have not chosen a root volume group, you will not be able to continue beyond the Volume Group Information screen.

10. Select one of the options from the Volume Group Information screen and press Enter. Each option does the following:

Choice 1	**Access this volume group and start a shell.** Selecting this choice imports and activates the volume group and mounts the file systems for this root volume group before providing you with a shell and a system prompt.
Choice 2	**Access this volume group and start a shell before mounting file systems.** Selecting this choice imports and activates the volume group and provides you with a shell and system prompt before mounting the file systems for this root volume group.
Choice 99	Entering `99` returns you to the Access a Root Volume Group screen.

After either choice `1` or `2` is selected and processed, a shell and system prompt are displayed.

11. Take appropriate measures to recover data or take action (such as using the **bosboot** command) to enable the system to boot normally.

Troubleshooting an Installation from a System Backup

This section describes solutions for common problems when installing from a system image created with the **mksysb** command.

The section discusses the following topics:

- Bootup Failure
- mksysb Image Configuration on System Backup Tapes
- Source and Target Differences
- Suggestions for Reported Problems

Bootup Failure

If a backup tape fails to boot, you can still install using a **mksysb** image stored on the tape.

Boot the machine from Volume 1 of the AIX product media, then install the backup from Maintenance mode. Refer to Installing BOS from CD–ROM or Tape, on page 5-9 for instructions on booting from product media. Follow the instructions to the point when the Welcome to the Base Operating System Installation and Maintenance screen is displayed.

Booting from the Product CD–ROM

Complete the following steps when the Welcome screen is displayed:

1. Choose the **Start Maintenance Mode for System Recovery** option.

   The Maintenance screen is displayed.

2. Choose the **Install from a System Backup** option.

   The Choose Tape Drive screen is displayed.

3. Choose the drive containing the backup tape.

   The system reads the tape and begins the installation.

4. Do not remove the CD from the CD–ROM drive.

   The system reads the kernel and device support required on the target system from the CD.

5. Return to 7step 7 in *To Install BOS from a System Backup* and continue the instructions for installing the backup.

   Note: The **Use Maps** option is not supported in Maintenance Mode. The section Prompted Installation, on page 5-10 includes a description of the use of maps on disks selected in the System Backup Installation and Settings screen.

Booting from the Product Tape

1. Create a diskette that contains a **./signature** file that contains the characters **'data'** and a **./bosinst.data** file with **SWITCH_TO_PRODUCT_TAPE = yes** in the **control_flow** stanza. See Customizing the BOS Install Program , on page 5-9 for information on creating these files.
2. Insert the diskette that you created in step 1 into the diskette drive.
3. Boot the system from Volume 1 of the product tape.
4. Choose the **Start Maintenance Mode for System Recovery** option when the Welcome screen is displayed.

   The Maintenance screen is displayed.

5. Choose the **Install from a System Backup** option.
6. Remove the product tape from the tape drive and insert the **mksysb** tape.

The Choose Tape Drive screen is displayed.

7. Choose the drive containing the backup tape.

   The system reads the tape and begins the installation.

   Note: The system will prompt you to remove the **mksysb** tape and insert the product tape after the **mksysb** backup has been restored.

8. Return to 7step 7 in *To Install BOS from a System Backup* and continue the instructions for installing the backup.

   Note: The **Use Maps** option is not supported in Maintenance Mode. The section Prompted Installation, on page 5-10 includes a description of the use of maps on disks selected in the System Backup Installation and Settings screen.

mksysb Image Configuration on System Backup Tapes

General Information Regarding mksysb System Backups

Bootable **mksysb** tapes are made up of four images, the boot image, the BOS Install/Maintenance image, the toc image and the system backup image. The system backup image, is the actual backup of the files in the rootvg in all jfs mounted filesystems.

The first three images are required to be created with a tape **block_size** value of 512. The **mksysb** command assures that the block size is 512 when these images are created. There are no restrictions on the block size used for the fourth (system backup image) on the tape, in AIX Version 4.3.2 or later. In previous versions, the block size would be changed to 512 for the fourth image, if the original system block size was less than 512. At the end of the **mksysb** tape creation, it was reset to the original value.

It is required that the value of the block size be saved in the /**tapeblksz** file in the second image on the tape. The second and fourth images are stored in backup/restore format. Again, **mksysb** assures the correctness of the tapes created using the **mksysb**command.

If there are problems with the **bosinst.data** file, the **image.data** file, or the **tapeblksz** file, they can be restored from the second image on the tape and checked. These files as well as commands necessary for execution in the RAM filesystem (when running in maintenance mode after booting from the tape) are stored in the second image.

Restoring a File from the Second Image Type

To restore a file from the second image follow these steps:

1. Be sure the tape block size is 512 by entering the following command:

   ```
   # lsattr -E -l rmt0
   ```

   If the block size is not correct, use the following command to set it to 512:

   ```
   # chdev -l rmt0 -a block_size=512
   ```

2. Make sure the tape is rewound. If the tape is not rewound, enter the following command:

   ```
   # tctl -f /dev/rmt0 rewind
   ```

3. Extract the necessary files by entering:

   ```
   # restore -xvq -s2 -f /dev/rmt0.1 .filename
   ```

   Note: The filename should be the full path, and always preceded with a **.** (dot character), such as `./tapeblksz .`

4. Rewind the tape by entering:

   ```
   # tctl -f /dev/rmt0 rewind
   ```

Source and Target Differences

Consider the differences in the source and target systems when planning an installation from a **mksysb** backup.

The original system image made with the **mksysb** command might not match your present configuration. For example, if you changed devices after backing up your system, the original source image does not have the correct device drivers for the target system. Avoid system inequalities such as different communication adapters, TTY attributes, and printer attributes. If you are using the Common Desktop Environment (CDE) on the target system, make all configuration changes, then shutdown and reboot the system before you start CDE.

The same suggestion applies when using a backup image to install additional systems. First configure the source system with drivers required for the target, then create the backup.

Suggestions for Reported Problems

The following troubleshooting tips apply to reported problems with installations from a **mksysb** image:

- Check that you have sufficient free blocks in the file systems to write temporary files.
- Check that each file system has at least 500 blocks free when the **mksysb** backup image is made. The system will need some work space in each file system when installing from a **mksysb** backup image.
- Check that you are using the correct tape type for the density setting selected.
- Check that the tape is *not* write protected.
- Clean the tape drive at the recommended intervals and use only approved data–grade tapes (not video tapes for 8 mm).
- 7206 4–mm Digital Audio Tape (DAT) tape drives use only DAT tapes marked with the Dataphone Digital Services (DDS) symbol. Any other DAT tapes (for example, voice grade) will not work.
- Check the /**smit.log** file for any errors from SMIT.
- Check that your **mksysb** backup image contains an **image.data** file. If you create the **mksysb** backup image through Web-based System Manager or SMIT, it is done automatically. If you run **mksysb** from the command line, you must either run the **mkszfile** command first, or use the **–i** flag with the **mksysb** command.

Cleaning Up Optional Software and Service Updates

This procedure describes how to clean up after an interrupted installation of optional software products. The cleanup procedure attempts to delete software products that were partially installed or that have been left in an ”ing” state (that is, applying, committing, rejecting, or removing). For example, if your attempt to install a service update was not successful, the update may be in the ”applying” rather than the ”applied” state. The ”ing” states 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.

The cleanup procedure attempts to revert the product to its previous state. For example, if you are cleaning up an update that is in the committing state, the cleanup procedure attempts to return the update to the applied state. If you have a product in the committing state or an update in the applying 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.

The system automatically performs a cleanup when an installation cannot be completed because of a failure or interruption. Normally, the only condition under which you may have to use the cleanup procedure described in this section is if the system shuts down or loses power during an installation or if the installation process terminates abnormally. Occasionally, you will be 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 Optional Software Installation and Update Concepts, on page A-1 .

> **Note:** This procedure applies only to the installation of optional software products. If your AIX Version 4.3 Base Operating System installation was unsuccessful, go to Accessing a System That Will Not Boot, on page 11-3 .

The next section contains a procedure for cleaning up software, using either the Web-based System Manager application or the System Management Interface Tool (SMIT). The **installp –C** command can also be used to clean up software.

To Clean Up Software with the Web-based System Manager Application

If the installation you are performing with the Web-based System Manager application fails, perform the following steps.

1. To start the Web-based System Manager Software application, enter: **wsm software**. The Software container displays.
2. From the Software menu, select **Troubleshooting** > **Clean Up Failed or Interrupted Installation**. The system performs the following tasks:
   - Attempts to delete software products that were partially installed.
   - Attempts to revert to the previous version of any deleted products.

After performing the cleanup operation, restart the installation process.

Another troubleshooting option allows you to verify the software installed on the system. Perform the following steps to verify the software:

1. To start the Web-based System Manager Software application, enter: **wsm software**. The Software container displays.

2. From the Software menu, select **Troubleshooting** > **Verify all Installed Software**.
   - 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.

To Clean Up Software with SMIT

This procedure describes how 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 user.
2. Enter the **smit maintain_software** fast path.
3. From the Software Maintenance and Utilities screen, select the **Clean Up After a Failed or Interrupted Installation** option. The system performs the following tasks:
   - 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 is displayed.
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.

Troubleshooting a Full /usr File System

To free up space in a full /**usr** file system, complete one or more of the following tasks:

- Enter `installp -c all` to commit all updates and free up space in the /**usr** file system.
- If the system is not a Network Installation Management (NIM) system serving a Shared Product Object Tree (SPOT), enter /**usr**/**lib**/**instl**/**inurid –r** to remove client information for **root** file system installations. For information about NIM and SPOTs, see *AIX Version 4.3 Network Installation Management Guide and Reference*.
- Remove software that you do not need. See Maintaining Optional Software, on page 8-1 .

BOS Install Logs

Information saved in BOS installation log files may help you determine the cause of installation problems. To view BOS installation log files, enter **cd** /**var**/**adm**/**ras** and view the files in this directory. One example is the **devinst.log**.

Viewing Logs with SMIT

To view some logs in the /**var**/**adm**/**ras** directory, you can use the following SMIT fast path:

```
smit alog_show
```

Viewing Logs with the alog Command

To run a command to view some logs in the /**var**/**adm**/**ras** directory, enter:

```
alog -o -f bosinstlog
```

Using the snap Problem Determination Tool

The **snap** command assists you in compiling system configuration information quickly and easily. Once this information is compiled, you can view it and compress it for downloading to diskette or tape or for remote transmission. You may be asked by support specialists to execute the **snap** command to help them accurately identify your system problem.

Note: If you intend to use a tape to send a **snap** image to IBM for software support, the tape must be one of the following formats:

- 8mm, 2.3 Gb capacity
- 8mm, 5.0 Gb capacity
- 4mm, 4.0 Gb capacity

Using other formats will prevent or delay IBM software support from being able to examine the contents.

Disk Space Requirements

Approximately 8 MB of temporary disk space is required when executing *all* of the **snap** options on an average system. If only one or two options are chosen, the disk space required will be substantially less, depending on the option. The program automatically checks for free space in the /**tmp**/**ibmsupt** directory or the directory specified with the **–d** flag. If there is not enough space, you will have to expand the file system. You can suppress this check for free space by using the **–N** option.

Output Directory

The default directory for the output from the **snap** command is /**tmp**/**ibmsupt**. If you desire to name an optional directory, use the **–d** option with the path of the desired output directory. Each execution of the **snap** command appends to previously created files. See Cleaning Up Optional Software and Service Updates, on page 11-11 for instructions on cleaning up the files.

Execution Permissions

Only root has execute permissions for this command.

Cleanup

The cleanup option, **–r**, should be used to remove the information saved by the **snap** command and to retrieve disk space.

Options

The main options of the **snap** command are:

–g Gathers the output of the **lslpp –L** command. Support specialists use the output to re–create your operating system environment if other problem determination techniques fail. The output is stored in /**tmp**/**ibmsupt**/**general**/**lslpp.L**. Also, the **–g** flag gathers general system information and outputs it to /**tmp**/**ibmsupt**/**general**/**general.snap**.

–D Gathers dump and /**unix** (assumes dump device to be /**dev**/**hd7**).

–a Gathers information for all of the groups.

–c Creates a compressed tar image of all files in the /**tmp**/**ibmsupt** directory tree (or other output directory).

Note: Other information that is not gathered by the **snap** command can be copied to the **snap** directory tree before executing the **tar**/**compress** option. For example, you may be asked by the support specialist to provide a test case that demonstrates the problem. The test case should be copied to the /**tmp**/**ibmsupt** directory. When the **–c** option of the **snap** command is executed, the test case will be included.

–o Creates a tar file and downloads it to removable media.

–v Displays the output of the commands executed by the **snap** command.

Before executing the **snap –c** or **snap –o** commands, any additional information required by the Support Center should be copied to the /**tmp**/**ibmsupt**/**testcase** directory (or an alternate directory).

The **snap –c** and **snap –o** commands are mutually exclusive. Do not execute both during the same problem–determination session. The **snap –c** command should be used to transmit information electronically. The **snap –o** command should be used to transmit information on a removable output device.

To View the Usage Instructions

For instructions on how to gather information on selected groups (kernel, printer, SNA, NFS, TCP/IP, security, async, language, and file system), enter the **snap** command (with no options) at the system prompt.

Recovery

If you think a command started by the **snap** command is suspended due to an inaccessible server, first press Ctrl+C. Then enter one of the following commands:

Enter	For no action; return to current operation.
s	To attempt to kill current operation.
q	To quit **snap**.

Chapter 12. Acting on System and Error Messages

This chapter lists messages that can appear during the installation of AIX Version 4.3. Information about each message is organized in the following manner:

System Message	The system message is displayed in **bold** type.
Explanation	Describes what is likely to have caused the system message to be displayed.
System Action	Describes what the system does after the message is displayed.
User Action	Suggests a possible resolution to the problem suggested by the system message.

0516–404 allocp: Not enough resources available to fulfill allocation. Either not enough free partitions or not enough physical volumes to keep strictness. Try again with different allocation characteristics.

0516–788: extendlv: Unable to extend logical volume

0503–008 installp: There is not enough free disk space in file system /usr (506935 more 512–byte blocks are required.) An attempt to extend this file system was unsuccessful. Make more space available, then retry this operation.

Explanation	There is not enough space to complete the installation.
System Action	The installation cannot begin until the problem is resolved.
User Action	You have several options: • Select fewer filesets than the number originally selected for installation. OR • Extend the root volume group to another disk. Enter: **extendvg rootvg hdisk*Number***, where *Number* is the number of the specified disk. OR • Remove user–defined file systems to free up space in the **rootvg** file system. OR • Follow the instructions in Troubleshooting a Full /usr File System, on page 11-13 .

BOS Install: After saving all the data from the previous system into /tmp, it was discovered that there will not be enough free space in /tmp to make the boot image. Please reboot in normal mode and increase the size of /tmp or reduce the number of files to save as listed in the /etc/preserve.list file.

Explanation	During a preservation install, files listed in /**etc**/**preserve.list** were copied to /**tmp**. After doing so, there was not enough room in /**tmp** to create the boot image.
System Action	Installation cannot continue.
User Action	Reboot in normal mode and increase the size of /**tmp** or reduce the number of files to be saved.

BOS Install: You chose to create logical volumes mapped exactly as they were on the previous disks, but there are no map files specified in the image.data file.

Explanation	On system backup restore, **EXACT_FIT = yes** was specified in the **image.data** file, but no map files were specified in the **image.data** file.
System Action	No prompt mode is terminated, the user is prompted.
User Action	Run the **mkszfile** with the **–m** option before creating the system backup tape. OR Do not specify **EXACT_FIT = yes** in the **image.data** file.

The boot logical volume (`hd5` **) must be at least 8 megabytes. The system you are installing has a boot logical volume smaller than this, and the system does not have enough free contiguous physical partitions on *diskname* to increase the size of the boot logical volume. Please reboot in normal mode and correct this problem, or restart the installation and choose an overwrite install. Use the lspv –M *diskname* command to see the current allocation map of the disk.**

OR

Error: No space available to create a larger boot logical volume.In order to proceed with this installation the size of the boot logicalvolume (`hd5` **) must be increased to 8 MB. At this time there are not *N*contiguous physical partitions available on the boot disk (*diskname*) forrecreating the larger boot logical volume. You must free up this spaceby removing or relocating one or more logical volumes or file systemsfrom *diskname*. Use lspv –M *diskname* to see its current partition allocation map.**

Note: The diskname is the name of the disk on which logical volume hd5 exists. For example:

```
hdisk0
```

N is the number of partitions needed in the boot logical volume.

Explanation	Starting with AIX Version 4.3.3 the boot logical volume (**blv**), logical volume `hd5` , must be greater than 4 megabytes. If your system had disks less than 4 gigabytes in size in the root volume group, or was originally installed with a version of AIX prior to Version 4.3.2, your boot logical volume may only be 4 megabytes. You may experience this failure during preservation or migration installations. Overwrite installations will create the boot logical volume with a size of at minimum 8 megabytes. Only the disk that currently contains the boot logical volume is checked for additional partitions in order to increase the size of the boot logical volume. Other disks in the rootvg are not checked.
System Action	You will be prompted to reboot in normal mode from the existing rootvg and increase the boot logical volume, or restart the installation and choose an overwrite install.

User Action	Only a system administrator with root authority should attempt to increase the boot logical volume. To increase the boot logical volume, follow the process described below:
	
	If you've gotten this error then your partition size is less than 8 megabytes, and you need to increase the number of partitions in `hd5` (boot logical volume). You can check your partition size by with the command:
	
	`# lsvg rootvg`
	
	Look for the field: `PP SIZE:`
	
	You can get the current number of partitions in `hd5` with the command:
	
	`# lslv hd5`
	
	Look for the field: `LPs:`
	
	Your boot logical volume must contain enough partitions such that:
	
	`PP SIZE` multiplied by `LPs` is greater than or equal to 8.
	
	The partitions for the boot logical volume must be contiguous.
	
	If there were free partitions available next to `hd5` or at some other location on the disk that contains `hd5` , the install process would have increased the size of `hd5` , and continued.
	
	To view the current allocation map (free and used partitions) of a disk, use the command:
	
	`# lspv -M` *`diskname`*
	
	If there are not enough contiguous free partitions, then you will need to increase the size of the boot logical volume (`hd5`) using one of the options described below, and rerun the installation. The options for increasing the boot logical volume size are as follows:
	
	• If a user–created logical volume or file system follows `hd5` on the disk (check the allocation map), and has free partitions, then you could back up, remove, recreate and restore the logical volume.
	
	• If there is another disk in the rootvg, that has enough contiguous free partitions, then you could move `hd5` to the other disk with the following steps:
	
	a. Verify that the disk you plan to move `hd5` to is bootable by using the command:
	
	`bosinfo -B` *`diskname`*
	
	If `1` is returned, the disk is bootable.
	
	If `0` is returned, the disk is not bootable.
	
	b. Find the free contiguous partitions you need on the other disk by viewing the allocation map with the command:
	
	`lspv -M` *`diskname`*

c. Find the free contiguous partitions you need on the other disk by viewing the allocation map with the command:

```
lspv -M diskname
```

d. Create a map file to use when recreating `hd5` . For example, if you want to recreate `hd5` on `hdisk2` , on partitions 88 and 89, use the command:

```
echo "hdisk2:88-89" > your_MAP_file
```

e. Remove the existing hd5:

```
rmlv -f hd5
```

f. Create the new `hd5` :

```
mklv -y hd5 -t boot -m your_MAP_file rootvg 2
```

2 is the number of partitions and may vary as needed.

g. Run **mkboot** to clear the boot record from the disk that previously contained hd5 (boot logical volume). For example, if `hd5` was previously on `hdisk0` , use the command:

```
mkboot -d /dev/hdisk0 -c
```

h. Use **bosboot**, to recreate the boot image and boot record on the new disk. For example, if `hd5` was recreated on `hdisk2` , use the command:

```
bosboot -a -d /dev/hdisk2
```

i. Change the bootlist of your system, to boot from the new disk. To see the current bootlist, use the command:

```
bootlist -m normal -o
```

If your previous `hd5` was on `hdisk0` , the output might be:

```
hdisk0
```

To change the bootlist to use `hdisk2` use the command:

```
bootlist -m normal hdisk2
```

If there were additional items in your bootlist, add them after `hdisk2` , with spaces separating each item.

	j. Reboot your system if there were no errors. • If you encountered this error when installing a mksysb on a system other than the system it was created on (cloning), then you may be able to use a customized **image.data** file to increase the size of `hd5` . The **vg_data** stanza contains the size of the physical partitions in the **PPSIZE** field. Use this information to determine how many partitions are needed for `hd5` . The **lv_data** stanza for `hd5` contains the fields for the number of logical partitions (**LPs**) and the minimum number of logical partitions required for the logical volume (**LV_MIN_LPS**). These fields need to be set to the number of partitions needed. Refer to the section titled Create and Use a Supplementary Diskette for information on putting an **image.data** file on diskette as well as a **bosinst.data** file. If the source machine had no free partitions, and the target machine has the same disk size, then you may need to install using the shrink option, as well as the customized **image.data** file.

BOS Install: Could not create boot image.

Explanation	The **bosboot** command failed.
System Action	The boot image was not created.
User Action	Check the **/var/adm/ras/devinst.log** file for errors.

The bosinst.data file does not specify any bootable disks.

Explanation	The **bosinst.data** file does not specify any bootable disks.
System Action	No–prompt mode is terminated, and the user is prompted.
User Action	When the system prompts, select bootable disks to install on. OR Add a bootable disk to the **bosinst.data** file target_disk_data stanzas.

The bosinst.data file specified doing a migration install, but there is no existing root volume group of level 3.2, 4.1, or 4.2.

Explanation	An BOS installation method of **migration** was specified in the **bosinst.data** file, but the existing volume group is at level 3.1 or 4.3.
System Action	This error only occurs during a nonprompted BOS installation. The installation menus are displayed.
User Action	Respond to the menu prompts to complete the installation.

The bosinst.data file specified doing either a migration or a preservation install, but there is no existing root volume group.

Explanation	A BOS installation method of **migration** or **preserve** was specified in the **bosinst.data** file, but no root volume group was found.
System Action	This error only occurs during a nonprompted BOS installation. The installation menus are displayed.
User Action	Respond to the menu prompts to complete the installation.

The data file did not specify enough disk space to contain the operating system.

Explanation	No–prompt mode was specified, and there were not enough disks specified in the **bosinst.data** file to hold the operating system.
System Action	No–prompt mode is terminated, the user is prompted.
User Action	When the system prompts, select disks to install on. OR Add more **target_disk_data** stanzas to **bosinst.data** file.

Duplicate lv_data stanzas specified in the image.data file. The installation cannot continue because data may be lost.

Explanation	An **lv_data** stanza was duplicated in the **image.data** file.
System Action	Installation cannot continue.
User Action	Correct the problem and try the installation again.

Duplicate fs_data stanzas specified in the image.data file. The installation cannot continue because data may be lost.

Explanation	An **fs_data** stanza was duplicated in the **image.data** file.
System Action	Installation cannot continue.
User Action	Correct the problem and try the installation again.

The following disks failed the preliminary diagnostic tests: <disk name>

bosset: No hard disks can be accessed.

Explanation	The listed disks failed pretest.
System Action	The system initiated a diagnostic pretest on the specified disk.
User Action	Run full diagnostics on the specified disks.

Disks specified in bosinst.data do not define a root volume group.

Explanation	No–prompt mode was specified, and the install method was set to **preserve** or **migrate**, and the disks specified in **bosinst.data** do not define a root volume group.
System Action	No–prompt mode is terminated, and the user is prompted.
User Action	When the system prompts, select a root volume group to install on. OR Specify disks in the **bosinst.data** file that define a root volume group.

Encountered an unrecoverable error.

Explanation	The menus subsystem encountered an unrecoverable error.
System Action	The menu is restarted.
User Action	None

The image.data file contains no vg_data stanza for rootvg. The installation cannot continue.

Explanation	The **image.data** file is incomplete.
System Action	Installation cannot continue.
User Action	Use the default **image.data** file supplied with product media.

image.data has invalid logical volume data. Cannot continue.

Explanation	The system could not parse the logical volume data stanzas in the **image.data** file.
System Action	Installation cannot continue.
User Action	Use the default **image.data** file supplied with product media.

image.data has invalid file system data. Cannot continue.

Explanation	The system detected invalid file system data stanzas in the **image.data** file.
System Action	Installation cannot continue.
User Action	Use the default **image.data** file supplied with product media.

0516–366 putlvodm: Volume group rootvg is locked. Try again.

0516–788: extendlv: Unable to extend logical volume.

0503–008 installp: There is not enough free disk space in file system /usr (506935 more 512–byte blocks are required.) An attempt to extend this file system was unsuccessful. Make more space available, then retry this operation.

Explanation	You interrupted the installation of your optional software.
System Action	Sometimes, when an installation is interrupted, the system locks the root volume group.
User Action	You must unlock the root volume group. Then attempt the installation procedure again. To unlock a root volume group: 1. Be sure you have logged in as root. 2. Enter **chvg –u rootvg** 3. Enter **smit_install** and attempt to install your optional software products again.

installp: An error occurred during bosboot processing.

Please correct the problem and rerun.

0301–52 bosboot: not enough file space to create: /tmp/disk.image.

OR

0301–152 bosboot: not enough file space to create: /tmp/unix.

Explanation	The **bosboot** command was unable to finish processing because of insufficient space in /**tmp**.
System Action	The bosboot process is interrupted. The error message, the amount of disk space required, and the available disk space are displayed. The disk space required indicates the number of 1024KB blocks required.
User Action	Free up space in the /**tmp** file system or extend the /**tmp** file system. Continue or restart the installation process. To resize the /**tmp** file system and complete the installation: 1. Note the error message preceding this one. Either the message `bosboot verification starting` or `bosboot process starting` will precede this message. 2. Change directories to /**tmp**. List the files and determine which can be deleted. If there is sufficient space available, go to step 6. If you need to expand /**tmp**, continue this procedure. 3. Enter **smit chfs** 4. Select the /**tmp** file system from the displayed list. 5. Add the additional block space required. The **smit chfs** command requires disk space to be defined in 512KB blocks. Double the required disk space displayed in the system message . 6. If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot verification starting` , rerun the installation procedure. OR If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot process starting` , enter **installp –C**. 7. Continue the installation process.

installp: An error occurred during bosboot processing.

Please correct the problem and rerun.

301–155 bosboot: Invalid or no boot device specified.

Explanation	An invalid device is specified with the **bosboot –d** command. The **bosboot** command was unable to finish processing because it could not locate the required boot device. The **installp** command calls the **bosboot** command with /**dev**/**ipldevice**. If this error does occur, it is probably because /**dev**/**ipldevice** does not exist. /**dev**/**ipldevice** is a link to the boot disk.
System Action	The bosboot process is interrupted.
User Action	Determine if the link to the boot device is missing or incorrect, correct the error and complete the installation process. To identify the boot device and complete the installation: 1. To identify the boot disk, enter **lslv –m hd5**. The boot disk name is displayed. 2. Create a link between the boot device indicated and the /**dev**/**ipldevice** file. Enter: **ln** /**dev**/***boot_device_name*** /**dev**/**ipldevice**. (An example of *boot_device_name* is **rhdisk0**.) OR 3. If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot verification starting` , rerun the installation procedure. OR If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot process starting` , enter **installp –C**. Continue the installation process.

Invalid table of contents.

Explanation	The installation of the operating system from a stacked tape (a bootable tape with multiple software images) was unable to verify the validity of the tape TOC. A valid TOC has a numeric string in the following format: `single_digit_number 12_digit_number single_digit_number` as the first entry in the TOC. For example, 1 042309235291 1 is a valid TOC header. The TOC records the tape position installable images. Without a valid TOC, the installation process cannot locate and install installable images.
System Action	The installation process returns to the System Settings menu.
User Action	Recreate your tape with a valid table of contents or contact your point of sale for assistance.

Missing image.data file. The tape does not contain a valid install image.

Explanation	The system could not find an **image.data** file.
System Action	Installation cannot continue.
User Action	The most likely cause of this error is the tape is bad. Try a different tape.

0512–0016 mksysb: Attempt to create a bootable tape failed: bosboot –d /dev/device –a failed with return code xxx.

OR

0512–0016 mksysb: Attempt to create a bootable tape failed: mkinsttape /dev/device failed with return code xxx.

Explanation	The *xxx* return code indicates the error: `5 OR 1` Not enough space in one or more of three file systems: – / must have at least 500 1KB blocks. – /**tmp** must have at least 7400 1KB blocks. – /**usr** must have at least 4000 1KB blocks. `11` Defective tape. `42 OR 45` Either the /**usr**/**lib**/**boot**/**unix** file is corrupted (may be 0 length) or the link to /**unix** is missing. `48` Cannot write to the tape drive or cannot read /**dev**/**blv**. This is probably caused by an incorrect density setting for the tape drive. It could also be caused by either a hardware problem with the tape drive or by dirty heads on the drive.
System Action	The **mksysb** command failed to make a bootable tape.
User Action	The return code *xxx* indicates the action required: `5 OR 1` Check the /, /**tmp**, and /**usr** file systems and create more space as required. `11` Replace the defective tape. `42 OR 45` Either restore the /**usr**/**lib**/**boot**/**unix** file from the original tape or create the missing link. `48` Check the tape drive settings and clean the heads.

There are no disks available on this system.

Explanation	No hard disks are configured on the system. Consequently, the only functioning menu option is the maintenance option.
System Action	Installation cannot begin until the problem is resolved.
User Action	You have several options: • Select **Maintenance** (option 3) from the Welcome to Base Operating System Install Menu, and select the **Limited Function Maintenance Shell**. Verify that no disks were configured by entering the following command: **lsdev –Cc disk** To determine if there were configuration errors, enter the command: **cfgmgr –v 2>1 | tee /tmp/cfgmgr.out** You can use the cat command to view **/tmp/cfgmgr.out**, and look specifically for errors in configuration of disks. The file can be copied to diskette media using either the **dd** or **pax** commands, and moved to a running system for ease of viewing. OR • Turn the system off and check the following on systems with SCSI devices: – Check all SCSI devices to ensure that all SCSI addresses are unique. – Make sure the SCSI cards are properly terminated. – If external SCSI devices are in use, make sure that the SCSI chain is terminated and that the devices are turned on. – Check the SCSI cabling and connections. – Reboot and attempt the install again. OR • Turn the system off and check the following on systems with IDE devices: – Check all IDE devices to ensure that all IDE master and slave settings are unique per controller. If only one IDE device is connected to a controller, it must be set to master. If an ATA device (disk) and an ATAPI device (CD–ROM or tape) are connected to the same controller, the ATA device must be set to the master device and the ATAPI device must be set as the slave device. – Check the IDE cabling and connections. – Reboot and attempt the install again. OR • Boot from the diagnostics and check the hard disks. OR • Follow your local problem–reporting procedures.

There are no disks on this system which can be booted.

Explanation	The system could not find any bootable disks on the system.
System Action	Installation cannot continue.
User Action	Some third–party disks are not bootable. If a disk should be bootable but is not, run diagnostics.

You chose to install only onto disks in the existing root volume group and those not in any volume group. There are not enough of those disks to contain the mksysb image.

Explanation	The EXISTING_SYSTEM_OVERWRITE field in **bosinst.data** was set to **yes**, and prompt was set to **no**, and there were not enough disks on the system that contained the root volume group or contained no volume group.
System Action	No–prompt mode is terminated, the user is prompted.
User Action	Use **target_disk_data** stanzas to specify the disks to install on, or set the EXISTING_SYSTEM_OVERWRITE in the **bosisnt.data** file to **any**. This allows any disks to be used for the install. OR When the system prompts, select disks to install on.

You chose to install only onto disks which are not contained in a volume group, but there are not enough of those disks to contain the mksysb image.

Explanation	The EXISTING_SYSTEM_OVERWRITE field in **bosinst.data** was set to **no**, and prompt was set to **no**, and there were not enough disks on the system that contained a volume group.
System Action	No–prompt mode is terminated, the user is prompted.
User Action	If you want the system to select the disk to install on, set the EXISTING_SYSTEM_OVERWRITE in the **bosisnt.data** file to **yes**. OR When the system prompts, select disks to install on.

0505–113 alt_disk_install: No target disk name provided.

Explanation	This message is displayed in three situations: 1. You did not enter a target disk. 2. The disk that was specified as the target disk has a volume group already associated with it. Running **lspv** should show the word `None` by disks that do not have a volume group associated with them. This is what **alt_disk_install** checks. 3. The target disk (or disks) specified are not bootable. **alt_disk_install** runs **bootinfo –B *disk_name*** on each disk specified in the target disk list. If any one **bootinfo –B** command returns a `0` , then the disk is not bootable, and it cannot be used as a target disk for **alt_disk_install**.

0505–117 alt_disk_install: Error restoring image.data file from mksysb image.

Explanation	This message is displayed when you are trying to install a **mksysb** image from tape. The **alt_disk_install** command first checks the second image on the tape for a **./tapeblksz** file, which contains the block size that the **mksysb** image was created in. The **mksysb** command creates this file and puts it in the second image on the tape. The first three images of a **mksysb** tape are always created at a 512byte block size. The **mksysb** image (the fourth image on the tape) can be created at another block size. If the **alt_disk_install** command cannot restore the **./tapeblksz** file from the second image, then the block size will remain what it was when the **alt_disk_install** command was started. It will attempt to restore the **./image.data** file from the **mksysb** image. If this block size does not match the block size that the **mksysb** image was created in, then the restore fails, and the **alt_disk_install** produces this error.

Chapter 13. Viewing README Files

This chapter describes how to view README files, which contain information not included in other documentation. The Base Operating System (BOS) includes a README file. Each software product may also have its own README file with new information specific to that product. After you install BOS, view these files to learn important changes before using your system.

Use the following procedure to view the README files for Base Operating System (BOS) software and optional software products:

1. Log in as root user if you have not already done so.
2. Enter the following command at the system prompt:

   ```
   cd /usr/lpp
   ```

3. Enter:

   ```
   ls */*README*
   ```

   The system lists README files for each software product installed on your system.

4. Access and exit specific README files by doing the following steps:

   a. Enter the following command to view a README file for a specific software product:

      ```
      pg xxx/README
      ```

      In this example, *xxx* is the directory name associated with a particular software product.

   b. Press Enter when the copyright screen appears.

   c. Press the following keys or key combinations to scroll through the README file:

To page down	Press Enter.
To page up	Type the minus (–) key, then Enter.
To move forward x **pages**	Type the plus (+) key and number of pages, then Enter. For example, to move forward five pages, type `+5` and press Enter.
To move backward x **pages**	Type the minus (–) key and number of pages, then Enter. For example, to move backward five pages, type `-5` and press Enter.

   d. Enter `q` at the : (colon) prompt to exit the README file.

Appendix A. Optional Software Installation and Update Concepts

This section supplements the procedures described in Optional Software and Service Updates Installation, on page 6-1 . Understanding the concepts in this appendix may assist you in installing optional software products and service updates on your system.

Packaging of Software Products

Note: Application developers who want to develop software packages to be installed using the **installp** command should refer to Packaging Software for Installation in *AIX General Programming Concepts: Writing and Debugging 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 packaging of a software product is divided in this way because many software products are large and have many pieces that can be used independently of each other. Dividing a product into separately installable filesets allows you to install only those filesets you need. You may prefer to install all the filesets included in a package or the entire product, or you may want to install only selected filesets, especially if you have limited hard disk space on your system.

The installation packaging of each fileset in a product may have been divided into three parts: the usr, root, and share parts. Although this can add further complexity to the understanding of the packaging, this parceling of a software product is necessary for the product to be used by diskless and dataless clients in AIX Version 4.3. These functions allow 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).

usr part 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 part 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 part 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.

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 root part of a product is optional because many products may not have any files that need to be specific to each individual machine. The usr and root parts of a product are packaged together in the same installable package.

Software Product Identification

The product name and level number identify a software product. The level of a software product in AIX Version 4.3 is defined as *vv.rr.mmmm.ffff*, where:

- *vv* is a numeric field of 1 to 2 digits that identifies the version number.
- *rr* is a numeric field of 1 to 2 digits that identifies the release number.
- *mmmm* is a numeric field of 1 to 4 digits that identifies the modification level.
- *ffff* is a 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 what 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).

Applying, Committing, Rejecting, and Removing Software Products and Updates

During and after installation, there are four major actions that can be taken with optional software products and service updates. Optional software and service updates can be applied, committed, rejected, and removed. Whether a particular action can be taken depends on whether the action is being applied to the entire software product or only a service update on which actions have previously been taken. These actions can be performed using either the Web-based System Manager Software application or the System Management Interface Tool (SMIT). The following sections describe these actions.

Apply Action (for Service Updates)

When you install a service update, it can be left in the applied state. When you only ”apply” an update, the former version of that software product is saved in the /**usr**/**lpp**/*PackageName* directory so that if you want to return to the former version, you can do so without having to reinstall it.

Only service updates can be in the applied state after installation. If you are installing an entire software product rather than just an update, then the software product is in the committed state after installation. In this case, the previous version of the software product is not saved, because you cannot have two versions installed.

To use Web-based System Manager to only apply service updates:

1. To start the Web-based System Manager Software application, enter: `wsm software` . The Software container displays.
2. From the Software menu, select **New Software (Install/Update)** > **Update Software (Update All** / **Install Fixes**.
3. From the Update Software dialog, click **Advanced**.
4. From the Advanced Options dialog, deselect the Commit software updates option.

To use SMIT to apply service updates, use the fast path: **smit update_by_fix**.

If you want to install a service update or software product from the command line, use the **installp –a** command to only apply the update, or use the **installp –a –c** command to apply and commit the update or software product.

Commit Action (for Service Updates)

Committing a software update removes the previous version of the product from the system to conserve disk space. Once a software product or update has been committed, it cannot be deleted from the system except by removing the entire software product (the base level product and all of its updates) or by force–installing it back to a previous level. You must have the base level of the fileset available on media in order to do a force–install.

Although applying and committing a service update are considered separate actions, both can be accomplished while installing the update. The default action is to both apply and commit the service update during installation when using either interface:

- Web-based System Manager Install Additional Software (Custom) dialog or Update Software (Update All/Install Fixes) dialog
- SMIT Custom Install path or Easy Install path (Install Software Bundle dialog).

Note that this default can be changed to only apply the update.

Using Web-based System Manager

1. To apply and commit a service update, start the Web-based System Manager Software application, enter: `wsm software` . The Software container displays.
2. From the Software menu, select **Software Utilities** > **Commit Applied Updates**.

3. In the Commit Applied Updates dialog, select to commit all updates in the applied state, or to commit individual updates in the applied state.

To perform this task from the command line, run the **installp –a –c** command to apply and commit an update.

To assist you in listing all service updates in the applied state, do the following in Web-based System Manager:

1. To start the Web-based System Manager Software application, enter: `wsm software` . The Software container displays.
2. From the Software menu, select **List Installed Software** > **Updates in Applied State**.

Alternatively, the SMIT **List All Applied but Not Committed Software** menu option (or the **installp –s** command) provides a list of all service updates in the applied state.

Applied service updates can also be committed after installation.

Reject Action (for Service Updates)

When you reject an applied service update, the update's files are removed from the system and the previous version of the software is restored. Only service updates in the applied state can be rejected. Use the Web-based System Manager Software application or the **smit reject** fast path to reject applied service updates.

Using Web-based System Manager

1. To start the Web-based System Manager Software application, enter: `wsm software` . The Software container displays.
2. From the Software menu, select **Software Utilities** > **Reject Applied Updates**.
3. In the Reject Applied Updates dialog, select to reject all updates in the applied state, or to reject specific updates in the applied state.

Remove Action (for Software Products)

When you remove a software product, the product's files are removed from the system and the Software Vital Product Data information is changed to indicate that the product is removed. The remove process also attempts to restore the system's configuration to its previous state, although this is dependent on the product and may not always be complete. Once a product is removed, there will no longer be a version of that product running on the system.

Use the Web-based System Manager Software application or the SMIT Custom Install path to remove software products. Any requisite software (software that is dependent on the product you are removing) will also be removed, unless it is required by other software on your system.

Using Web-based System Manager

1. To start the Web-based System Manager Software application, enter: `wsm software` . The Software container displays.
2. From the Software container, select the software you are removing and from the Selected menu, select **Remove Software...**.

Error Messages and Output from the installp Command

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. It shows `Command: Failed` if any of the attempted installations fail. These messages are generated when the **installp** return codes are zero and nonzero, respectively.

Note that a `Command: OK` message does not mean that all products in the input list for **installp** were installed. A `Command: Failed` message means that the installation of at least one product was started but did not complete. If a product's installation is never started, the `Command: OK` message may be displayed even though the product is not installed. However, 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 being missing from the installation media, or the product already being installed at the specified level.

As well as 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. The output from the **installp** command can be quite long, and it is recommended that the output be sent to a file when **installp** is run from the command line. When run from the SMIT installation menus, the output from **installp** 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.

A summary report is given 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 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 those products for which installation was not attempted due to missing requisite software or other requisite problems. Once preinstallation checking is complete, you will see a message similar to `The following software products will be applied:` (this message varies depending on the installation action that is taken).

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

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                    Level           Part        Event     Result
-------------------------------------------------------------------------
bos.net.tcp.client      4.1.0.0         USR         APPLY     SUCCESS
bos.net.tcp.client      4.1.0.0         ROOT        APPLY     SUCCESS
bos.sysmgt.smit         4.1.0.0         USR         APPLY     SUCCESS
bos.sysmgt.loginlic     4.1.0.0         USR         APPLY     SUCCESS
```

The summary report that identifies the software that was acted upon 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

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.

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. The cancelled installation of an update can be attempted 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.

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.release.modification.fix level* of the product).

Reinstalling at the Same or Earlier Level

You can reinstall a product at the same or earlier level using either Web-based System Manager or the command line (this is called *force–installing*).

To Reinstall Using Web-based System Manager

1. To start the Web-based System Manager Software application, enter: **wsm software**. The Software container displays.
2. Select **Software** from the menu.
3. From the pulldown, select **New Software (Install/Update)**.
4. Select **Install Additional Software (Custom)**.
5. On the Install Additional Software dialog, click **Advanced**.
6. On the Advanced Options dialog, select the **Overwrite same or newer versions** option.

   Note: If you are reinstalling from an earlier level *only*, you must deselect the option to Filter out language filesets and previous versions.

To Reinstall Using the installp Command

To reinstall at the same or earlier level from the command line, use the **installp** command with the force (**–F**) option. If you must use the force option, enter the **smit install_selectable_all** fast path 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. After completing the forced reinstallation of a product, you can update the product by entering the **smit install_fileset** fast path.

Reinstalling at a Later Level

You can reinstall a product at a later level using either Web-based System Manager or the command line.

To Reinstall Using Web-based System Manager

1. To start the Web-based System Manager Software application, enter: **wsm software**. The Software container displays.
2. Select **Software** from the menu.
3. From the pulldown, select **New Software (Install/Update)**.
4. Select **Install Additional Software (Custom)**.
5. Use the dialog to complete the task.

To Reinstall Using the installp Command

To reinstall at a later level from the command line, enter the **smit install_latest** fast path (without specifying the force option) and the updates will also be installed.

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 will be copied from your installation media (tape or diskette) to a directory on the disk so that they may be installed later using the disk directory as the input device. These files will be copied to a default directory named /**usr**/**sys**/**inst.images**. The image files within the disk directory will be 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.

To use Web-based System Manager to copy software to a directory, use the following steps:

1. To start the Web-based System Manager Software application, enter: `wsm software`. The Software container displays.
2. From the Software menu, select **Software Utilities** > **Copy Software to Directory**.

Alternatively, you can use the **smit bffcreate** fast path, or the **bffcreate** command to copy an installation image.

Updating Software

Software that is distributed to fix a problem in a product is called an *update*. Updates are installed with either the Web-based System Manager Software application or with SMIT. Updates are also installed with the **installp** command.

If you choose to apply the updates during installation (rather than committing them at installation time), you can still reject those updates later. If a particular update is causing problems on your system, you can reject that update without having to reject all the other updates that you installed. Once you are convinced that the updates cause no problems, you may want to commit those updates to retrieve the disk space that is used to save the previous levels of that software.

All software products have a version number and a release number that identify the release level of the product. In addition to this, product updates are assigned a modification level number and a fix level number to identify the level of the update.

Each AIX Version 4.3 formatted update package has a unique *mod* and *fix* level associated with it. The mod and fix level becomes a part of the product level for each software product fileset that is part of the update package. If the situation occurs where the fix for one problem spans across filesets, then a separate mod and fix ID is assigned to each fileset update package.

Following is an example of a fileset and a fileset update:

bos.net.tcp.client 4.1.0.0 is a fileset. **bos.net.tcp.client 4.1.0.1** is an update to that fileset. If another fileset update, **bos.net.tcp.client 4.1.0.2**, is generated, this update will contain all the fixes that were in the **bos.net.tcp.client 4.1.0.1**. If a cumulative AIX update is generated, the mod level of the fileset will increment, resulting in **bos.net.tcp.client 4.1.1.0,** which would contain all previous fixes.

Explanation of Requisites and Dependents

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

Installing Requisites

You can install prerequisites using either Web-based System Manager, SMIT, or the command line. (By default, requisite software is installed.)

Using Web-based System Manager

1. To start the Web-based System Manager Software application, enter: **wsm software**. The Software container displays.
2. Select **Software** from the menu.
3. From the pulldown, select **New Software (Install/Update)**.
4. Select either **Install Additional Software (Custom)** or **Update Software (Update All/Install Fixes)**.
5. On the next dialog, click **Advanced**.
6. Select the **Automatically install requisite software** option.

Using SMIT or the Command Line

From any of the SMIT installation menus, answer **yes** to the question, ”Automatically install PREREQUISITE software?” to have requisites automatically installed.

From the command line, using the **–g** flag with the **installp** automatically installs any requisites for the software you are installing.

When you attempt to install products or updates 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.

Before a software update can be committed, all updates that have requisites to the specified product or update must also be committed. Committing these requisites can be done from the command line by using the **–g** flag with the **installp** command, or by setting the **Commit requisites?** field in the ’Commit Applied Software Updates (Remove Saved Files)’ SMIT menu (use the **smit commit** fast path).

Removing Dependents

A *dependent* software product or update is one that requires the specified product or update to be installed before it can be installed. Before a version of a software product can be removed, all products or updates that are dependent upon the specified product or update must also be rejected or removed.

You can remove dependents using either Web-based System Manager, SMIT, or the command line.

Using Web-based System Manager

1. To start the Web-based System Manager Software application, enter: **wsm software**. The Software container displays.
2. From the Software container, select the software you are removing and from the Selected menu, select **Remove Software...**.
3. In the dialog, click **Advanced**.

4. Select **Remove dependent software**.

Using SMIT or the Command Line

From the SMIT menu Reject Applied Updates (Use Previous Version), answer **yes** to the question ”REJECT dependent software?” to have requisites automatically rejected. From the menu Remove Applied Software Products, answer **yes** to the question ”Remove dependent software?”

From the command line, use the **–g** flag with the **installp**.

Note: Any software updates dependent on another update that is eligible to be rejected should always be in the applied, not the committed, state. The action of rejecting software updates changes the currently active version of that software product on the system. You should use extreme *caution* when automatically rejecting dependent updates because that action could change the currently active version of some product that you might prefer not to be altered. It is recommended that you preview the reject process beforehand to see the list of requisites that will also be rejected. When you attempt to reject software that has dependents that are not also being rejected (with the command line list or automatic inclusion), you receive an error message indicating what dependent software must first be rejected. Using the **–g** flag with the **installp** command attempts to reject this software for you.

Appendix B. Software Installed Automatically during BOS Installation

The BOS installation program first installs the Base Operating System Runtime (**bos.rte**) image, then installs the appropriate set of filesets, depending upon whether it is a graphical or an ASCII system.

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.

Use the Web-based System Manager Software application to verify the software installed on your system. From the Software menu, select **Troubleshooting** > **Verify all Installed Software**.

You can also list all the software installed on your system by issuing the following command:

```
lslpp -L | pg
```

Base Operating System (BOS) Licensed Program

The following list includes filesets that the system installation program automatically installs:

- Base Operating System License Management
- Base Operating System Runtime
- Base Application Development Libraries
- C Set ++ for AIX Application Runtime
- Hardware Device Support
- License Use Management Runtime Code
- Network Computing System 1.5.1
- Network File System Client
- Run–time Environment for AIX Terminals
- Software Error Logging and Dump Service Aids
- System Backup and BOS Install Utilities
- System Management Interface Tool (SMIT)
- Language–Specific Locale Support
- Terminal Definitions for Digital Equipment, IBM, and Personal Computer Terminals
- TCP/IP Client Support
- TTY Device Driver Support Software

Systems which support diagnostics from the running system also install:

- Hardware Diagnostics

If the system is installed from an ASCII terminal console:

- Terminal Definitions for Televideo and Wyse Terminals

Graphical System Products

This list includes graphical system products that the installation program automatically installs only if the installed machine has a graphics adapter as the console. These products may be installed later by selecting the Graphical Support bundle in one of the software installation applications.

- AIX Common Desktop Environment (CDE) 1.0
- AIXwindows Runtime Environment
- AIXwindows Motif Libraries
- AIXwindows Motif Window Manager
- AIXwindows X11R3 and X11R5 Compatibility Libraries
- AIXwindows Motif 1.0 Compatibility Libraries
- AIXwindows Client Applications
- AIXwindows Default Fonts
- AIXwindows Latin 1 Fonts
- AIXwindows X Consortium Fonts
- AIXwindows Utility Applications
- Web-based System Manager
- Graphical SMIT
- Text Formatting Services
- Writer's Tools

Appendix C. Compatibility between AIX Version 3.2 and AIX Version 4.3

All AIX applications based on AIX Version 3.2 and for use with POWER, POWER/2, and POWERPC–based models, will run compatibly on AIX Version 4.3 without recompilation for those same models. The only exceptions to this statement are applications using:

- Unsupported own loadable kernel extensions
- Certain High Function Terminal control interfaces
- X11R3 input device interfaces
- CIO LAN device driver interface
- SCSI device configuration methods (IHVs)
- nlist() interface
- DCE threads

or applications compiled using POWER2– or PowerPC–specific compiler options, but executed on models other than POWER2 or PowerPC.

Any program that must run in all environments (POWER, POWER2, and PowerPC models 601 and higher) must be compiled using the common mode of the compiler. Programs compiled to exploit POWER2 technology must be run on POWER2–based processors. Existing code need not be recompiled to run.

Applications created on a system using AIX Version 4.3 may not function reliably on a system using AIX Version 3.

Applications must have been created using the AIX shared libraries for these statements to apply.

A system using AIX Version 3.2 can operate as a server system for client machines using AIX Version 4.3 with the following exceptions:

- Network installation of AIX Version 4.3 clients
- Service SNA or X.25 to AIX Version 4.3 clients
- Service HCON to AIX Version 4.3 clients
- Service CGE extensions of PEX and PEX–PHIGS
- Use AIX Version 4.3 client installation formats.

Font servers may be required on the AIX Version 4.3 clients to reliably handle AIXwindows between server and client.

A system using AIX Version 4.3 may operate as a server system for client machines using AIX Version 3.2 or greater as long as the necessary compatibility options are installed. All statements about binary compatibility apply in this case. AIX Version 4.3 applications may not execute reliably on AIX Version 3 systems using remote network mounts of AIX Version 4.3 file system.

AIX Version 4.3 Installation and Compatibility with Version 3.2.5

Users installing AIX Version 4.3 who are concerned about binary compatibility with AIX Version 3.2 should install the compatibility filesets offered on the installation media. These filesets offer commands, library versions, symbolic links and other items that, when added to the system, make it look more like a AIX Version 3.2 system from an application point of view.

While some of these filesets increase disk requirements (substantially, in the case of the AIXwindows X11R3 and R4 compatibility packages) and contain obsolete function, the compatibility filesets increase portability in an environment with machines running mixed levels of AIX. Installing the compatibility filesets is highly recommended.

If you performed a Migration Installation, you do not need to install these filesets.

Filesets are included for:

- Base operating system commands
- Base operating system libraries
- Base operating system curses/termcap
- Base operating system networking
- Base operating system directories/files (symlinks)
- Messages
- X11R3
- X11R4
- X11 fonts

Use the instructions in Installing Optional Software and Service Updates, on page 6-1 to install these filesets. The filesets are listed with **compat** in the name. For example, the **bos.compat.cmds** fileset contains the base operating system compatibility commands, and the **X11.compat.lib.X11R3** fileset contains the AIXwindows X11R3 compatibility libraries.

Migrating Network Software

The following must be considered when migrating network software:

Migrating TCP/IP from Version 3.2

Configuration files are saved in **/lpp/save.config/etc**. The file from the previous release is named **filename.old**, and the shipped file is named **filename.new**. For example, when **/etc/rc.tcpip** is migrated:

/etc/rc.tcpip	is upgraded and your configuration information is saved.
/lpp/save.config/etc/rc.tcpip.old	is the original **rc.tcpip** file (with your configuration changes).
/lpp/save.config/etc/rc.tcpip.new	is the version shipped with your latest level of AIX (without your configuration changes).

The following files are migrated:

- **/etc/rc.net**
- **/etc/rc.bsdnet**
- **/etc/services**

All the services previously defined are kept. The AIX Version 4.3 **/etc/services** file contains all the defined services from the Request for Comment (RFC) and Internet Engineer Task Force (IETF) standards document. Where a conflict exists between a service you have previously defined and a globally defined service (from an RFC), your service will be kept and the official one commented out.

- **/etc/inetd.conf**
- **/etc/rc.tcpip**
- **/etc/bootptab**
- **/etc/3270.keys**
- **/etc/3270keys.hft**

In most cases, your TCP/IP configuration will migrate without problems. If you have made substantial changes to any of the preceding files, be sure everything you changed still works after migration is complete.

Migrating NFS and NIS from Version 3.2

The **/etc/rc.nfs** and **/var/yp/Makefile** files are not migrated. The old files are saved in **/lpp/save.config/etc/rc.nfs** and **/lpp/save.config/var/yp/Makefile**. You must configure your Network Information Service (NIS) domain name before an NIS client will work.

For NIS servers, the NIS databases are unchanged. You must reconfigure the NIS domain and restore any changes you previously made to **rc.nfs** and the **Makefile** because **rc.nfs** and **Makefile** get replaced. The old files are saved in **/lpp/save.config** with their corresponding path names. The user and group information is retained because the **passwd** and **group** files are not changed in a migration install.

Migrating XStations from Version 3.2 or Version 4.1

The **/etc/bootptab** file is migrated during migration installation.

Appendix D. Migrating from AIX Version 3.2.x, AIX Version 4.1, or AIX Version 4.2.f

This section lists things to consider before migrating to AIX Version 4.3:

- User and Group Definitions
- Migrating Network Software
- Obsolete Filesets
- Renaming Devices

User and Group Definitions

For the migration and preservation processes to function correctly, all system users and groups that were defined in the **/etc/group** and **/etc/passwd** files in the original AIX distribution must be redefined.

The following is a list of the minimum that should exist in the **/etc/passwd** and **/etc/group** files before installing, updating, or migrating to AIX Version 4.3.

Group Definitions	
/etc/passwd	**/etc/group**
root:!:0:0::/:/ bin/ksh	system:!:0:root
daemon:!:1:1::/etc:	staff:!:1:
bin:!:2:2::/bin:	bin:!:2:root,bin
sys:!:3:3::/usr/sys:	sys:!:3:root,bin,sys
adm:!:4:4::/var/adm:	adm:!:4:bin,adm
uucp:!:5:5::/usr/lib/uucp:	uucp:!:5:uucp
guest:!:100:100::/home/guest	mail:!:6:
nobody:!:4294967294:4294967294::/:	security:!:7:root
lpd:!:9:4294967294::/:	cron:!:8:root
	printq:!:9:
	audit:!:10:root
	ecs:!:28:
	nobody:!:4294967294:nobody,lpd
	usr:!:100:guest

Migrating Network Software

The following must be considered when migrating network software:

Migrating TCP/IP from Version 3.2

Configuration files are saved in **/lpp/save.config/etc**. The file from the previous release is named **filename.old** , and the shipped file is named **filename.new**. For example, when /etc/rc.tcpip is migrated:

/etc/rc.tcpip	is upgraded and your configuration information is saved.
/lpp/save.config/etc/rc.tcpip.old	is the original **rc.tcpip** file (with your configuration changes).
/lpp/save.config/etc/rc.tcpip.new	is the version shipped with your latest level of AIX (without your configuration changes).

The following files are migrated:

- **/etc/rc.net**
- **/etc/rc.bsdnet**
- **/etc/services**

All the services previously defined are kept. The AIX Version 4.3 **/etc/services** file contains all the defined services from the Request for Comment (RFC) and Internet Engineer Task Force (IETF) standards document. Where a conflict exists between a service you have previously defined and a globally defined service (from an RFC), your service will be kept and the official one commented out.

- **/etc/inetd.conf**
- **/etc/rc.tcpip**
- **/etc/bootptab**
- **/etc/3270.keys**
- **/etc/3270keys.hft**

In most cases, your TCP/IP configuration will migrate without problems. If you have made substantial changes to any of the preceding files, be sure everything you changed still works after migration is complete.

Migrating NFS and NIS from Version 3.2

The **/etc/rc.nfs** and **/var/yp/Makefile** files are not migrated. The old files are saved in **/lpp/save.config/etc/rc.nfs** and **/lpp/save.config/var/yp/Makefile**. You must configure your Network Information Service (NIS) domain name before an NIS client will work.

For NIS servers, the NIS databases are unchanged. You must reconfigure the NIS domain and restore any changes you previously made to **rc.nfs** and the **Makefile** because **rc.nfs** and **Makefile** get replaced. The old files are saved in **/lpp/save.config** with their corresponding path names. The user and group information is retained because the **passwd** and **group** files are not changed in a migration install.

Migrating XStations from Version 3.2 or Version 4.1

The **/etc/bootptab** file is migrated during migration installation.

Obsolete Filesets

Obsolete filesets are AIX Version 3.2 filesets that have some, but not all, files replaced by filesets that are in AIX Version 4.3.

After a migration install has completed, you may have filesets on the system in the **OBSOLETE** state. These filesets cannot be updated, but are left on the system if they are needed by the running system.

Renaming Devices

If you migrate a system from AIX Version 3.2 to AIX Version 4.3, you may have to rename some of the devices. The AIX Version 4 database must be built from scratch when the system is rebooted because the device configuration database in AIX Version 3 is not compatible with AIX Version 4 database. In this case, the devices are named as they are found, and there may be some cases where these names do not match the names in AIX Version 3.

Appendix E. Glossary

/**usr file system.** Contains files and programs necessary for operating the machine.

/**tmp file system.** A shared storage location for files.

/**var file system**. Contains files that are variable on a per–client basis, such as spool and mail files.

/ **file system**. The root file system; contains files that contain machine–specific configuration data.

APAR. Authorized program analysis report. A report of a problem caused by a suspected defect in a current, unaltered release of a program.

applet. A program, intended for delivery over the Internet, which can be included in an HTML page, just as an image can be included.

apply. When a service update is installed or *applied*, it enters the applied state and becomes the currently active version of the software. When an update is in the applied state, the previous version of the update is stored in a special save directory. This allows you to restore the previous version, if necessary, without having to reinstall it. Software that has been applied to the system can be either *committed* or *rejected*. The **installp –s** command can be used to get a list of applied products and updates that are available to be either committed or rejected. See also *commit* and *reject*.

Base Operating System (BOS). The collection of programs that controls the resources and the operations of the computer system.

boot device. The device that assigns the fixed disk within the root volume group (rootvg) that will contain the startup (boot) image.

bosinst.data. The file that controls the actions of the BOS installation program.

bundle. A collection of software products available for installation.

CD–ROM. High–capacity, read–only memory in the form of an optically read compact disc.

clean up. The clean–up procedure instructs the system to attempt to remove software products that were partially installed. The system also attempts to revert to the previous version of the removed product. 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. After the clean up procedure is complete, you can attempt to install the software again.

client. In a distributed file system environment, a system that is dependent on a server to provide it with programs or access to programs.

commit. When you commit software, you are making a commitment to that version of the software product. When you commit a product, the saved files from all previous versions of the software product are removed from the system, thereby making it impossible to return to a previous version of the software product. Software can be committed at the time of installation by using either the Web–based System Manager or SMIT interface (or by using the **–ac** flags with the **installp** command). Note that committing already applied software does not change the currently active version of the software product. It merely removes saved files for the previous version of the software product. The rejection of the installation level of the product does *not* have the same meaning as the rejection of updates to the product. Once you commit a new version of a product, you must reinstall the previous version if you want to use that version again. Compare to *apply* and contrast with *reject* and *remove*.

complete overwrite installation. An installation method that completely overwrites an existing version of the Base Operating System that is installed on your system. This procedure may impair recovery of data or destroy all existing data on your hard drives. Be sure to back up your system before doing a complete overwrite installation.

Configuration Assistant. A graphical interface application used to perform post–installation system configuration tasks.

configure. To describe to a system the devices, optional features, and program products installed on a system.

console device. During the installation of the Base Operating System (BOS), the system console is the display device at the system on which you are installing the software.

corequisite. A product or update that must be installed concurrently with another specified product or update.

daemon. A program that runs unattended in the background to perform a standard service. Some daemons trigger automatically to perform their task and others operate on a timed or periodic basis.

dataless. A workstation without local file systems or local boot images that accesses some of its resources remotely. Dataless clients use a local disk used for paging and dump devices.

dependent. A software product that requires another product or update to be installed *before* or *at the same time* it is installed. Contrast with *prerequisite*.

destination disk. The disk to which you are installing.

directory. A type of file containing the names and controlling information for other files or other directories.

diskless. A workstation without local file systems or local boot images that accesses some of its resources remotely. Diskless clients boot remotely from a diskless server and use the server for remote paging.

display. A computer output screen on which visual information is displayed.

display device. See *display*.

Easy Install. An application used to install optional software or service updates in the form of software bundles.

environment. (1.) The settings for shell variables and paths that are set when the user logs in. These variables can be modified later by the user. (2.) A named collection of logical and physical resources used to support the performance of a function.

environment variable. (1.) A variable that describes the operating environment of the process. Common environment variables describe the home directory, command search path, the terminal in use, and the current time zone (the **HOME**, **PATH**, **TERM**, and **TZ** variables, respectively). (2.) A variable that is included in the current software environment and is therefore available to any called program that requests it.

file. The collection of related data that is stored and retrieved by an assigned name. Contrast with *special file*.

file system. The collection of files and file management structures on a physical or logical mass storage device, such as a diskette or minidisk.

file tree. The complete directory and file structure of a particular node, starting at the root directory. A file tree contains all local and remote mounts performed on directories and files.

fileset. An individually installable option or update. Options provide specific function and updates correct an error in, or enhance, a previously installed option.

fixed disk. (1.) A flat, circular, nonremovable plate with a magnetizable surface layer on which data can be stored by magnetic recording. A rigid magnetic disk used in a fixed–disk

drive. (2.) The term fixed disk is also used loosely in the industry for boards and cartridges containing microchips or bubble memory that simulate the operations of a fixed–disk drive.

full path name. The name of any directory or file expressed as a string of directories and files beginning with the root directory. See also *path name*.

graphical user interface. A type of computer interface consisting of a visual metaphor of a real–world scene, often a desktop. Within that scene are icons, representing actual objects, that the user can access and manipulate with a pointing device.

hard disk. See *fixed disk*.

hardware. The physical equipment of computing and computer–directed activities. The physical components of a computer system. Contrast with *software*.

host. (1.) The primary or controlling computer in a communications network. (2.) A computer attached to a network.

host name. The Internet address of a machine in the network. Also known as the host ID.

HTML. HyperText Markup Language is the tagging language that a web browser uses to interpret and display documents.

hypertext. A way of presenting information online with connections between one piece of information and another. These connections are called hypertext links. Thousands of these hypertext links enable you to explore additional or related information throughout the online documentation. See also *hypertext link*.

hypertext link. A connection between one piece of information and another. See also *hypertext*.

icon. A picture or graphical representation of an object on a display screen to which a user can point to with a device, such as a mouse, to select a particular operation or perform a certain action.

initial program load (IPL). (1.) The initialization procedure that causes an operating system to commence operation. (2.) The process by which a configuration image is loaded into storage at the beginning of a work day or after a system malfunction. (3.) The process of loading system programs and preparing a system to run jobs.

input device. The device that is the source of the software you are installing. The input device can be a tape drive, CD–ROM drive, diskette drive, or a directory.

Installation Assistant. An application used to perform system configuration tasks.

installation image. An installation image contains a copy of the software you are installing in backup format, as well as copies of other files the system needs to install the software product.

Internet address. The numbering system used in TCP/IP internetwork communications to specify a particular network or a particular host on that network with which to communicate. Internet addresses are commonly denoted in dotted decimal form.

IPL. See *initial program load*.

license password. The key that allows a software product to be used. A string encoded with license information for a software product.

locale. A subset of a user's environment that defines conventions for a specified culture, such as time formatting, numeric formatting, monetary formatting, and character classification, conversion, and collation.

logical partition (LP). (1.) One to three physical partitions (copies). The number of logical partitions within a logical volume is variable. (2.) A fixed–size portion of a logical volume. A logical partition is the same size as the physical partitions in its volume group. Unless the logical volume of which it is a part is mirrored, each logical partition corresponds to, and its contents are stored on, a single physical partition. See also *logical volume*.

logical volume (LV). A collection of physical partitions organized into logical partitions all contained in a single volume group. Logical volumes are expandable and can span several physical volumes in a volume group. See also *logical partition*, *volume group*, and *migration installation.*

maintenance level update. The service updates that are necessary to upgrade the Base Operating System (BOS) or an optional software product to the current release level. See also *service update*.

migration installation. An installation method for upgrading AIX Version 3.2 or later to the current release while preserving the existing root volume group. This method preserves the /usr, /tmp, /var, and / (root) file systems, as well as the root volume group, logical volumes, and system configuration files. Migration is the default installation method for, and can only be used on, an AIX Version 3.2 or later machine. See also *root volume group* and *logical volume*.

monitor. (1.) A device that observes and verifies operations of a data processing system. (2.) Synonym for *display*.

mount. To make a file system accessible.

name server. A host that provides name resolution for a network. Name servers translate symbolic names assigned to networks and hosts into the efficient Internet addresses used by machines.

Network File System (NFS). A distributed file system that enables users to access files and directories located on remote computers and treat those files and directories as if they were local. NFS is independent of machine types, operating systems, and network architectures through the use of remote procedure calls (RPC).

Network Installation Management (NIM). An environment that provides installation and configuration of software within a network interface.

new installation. An installation method used when the fixed disk or disks you are installing BOS onto are empty. A fixed disk is considered empty if it does not contain any data or if it contains data not in a volume group.

NIM. See *Network Installation Management*.

Object Data Manager (ODM). A data manager intended for the storage of system data. The ODM is used for many system management functions. Information used in many commands and SMIT functions is stored and maintained in the ODM as objects with associated characteristics.

option. An installable unit of a software package. Software product options are separately installable units that can operate independently from other options of that software package.

optional software. Also referred to as *optional software products*. Software that is *not* automatically installed on your system when you install the Base Operating System (BOS). Optional software can be products packaged and sold with BOS. Optional software can also be separately purchased software products that are specially ordered and not sold as part of BOS. In either case, BOS must be installed on your system before you can install optional software.

package. An installable unit of a software product. Software product packages are separately installable units that can operate independently from other packages of that software product.

paging. (1.) The action of transferring instructions, data, or both between real storage and external page storage. (2.) Moving data between memory and a mass storage device as the data is needed.

path name. A file name specifying all directories leading to the file. See also *full path name*.

physical volume. The portion of a single unit of storage accessible to a single read/write mechanism; for example, a drum, a disk pack, or part of a disk storage module.

preinstalled. Software that is installed by the manufacturer and ready to use.

prerequisite. A software product or a service update that must be installed *before* another software product or service update is installed. If you attempt to install software products or service updates without the required prerequisite software, a system message displays the names of required prerequisite software. Contrast with *dependent*.

preservation installation. An installation method used when a previous version of the Base Operating System (BOS) is installed on your system and you want to preserve the user data in the root volume group. However, this method overwrites the /**usr**, /**tmp**, /**var**, and / (root) file systems, so any user data in these directories is lost. System configuration must be done after doing a preservation installation.

Preventive Maintenance Package (PMP). A maintenance level update for your system. A PMP includes updates for the Base Operating System (BOS) and for each optional software product that is installed on your system.

primary language. The primary locale you want your system to use for screen information.

Problem Management Record (PMR). A number assigned by a support center to a reported problem.

product. A software product is made up of software packages that are separately installable.

reboot. To reinitialize the execution of a program by repeating the initial program load (IPL) operation.

reject. To cause portions of applied updates from becoming permanent parts of the product, based on the results of a test period. When you reject an applied service update, the update's files are deleted and the software vital product data (SWVPD) information is changed to indicate that the update is no longer on the system. The previous version of the software, if there is one, is restored and becomes the active version of the software. Contrast with *apply* and *commit*.

remove. For a software option, the deletion of the option and all of its applied or committed updates from the system. The software vital product data (SWVPD) information is changed to indicate that the option has been removed from the system. Depending on the option, system configuration information is also cleaned up, although this is not always complete. If a previous version, release, or level of the option is on the system, the system will not restore the previous version. Only an option with its updates can be removed. Updates cannot be removed by themselves. See also *commit*.

requisite. A software product or a service update that must be installed with another software product or service update. If you attempt to install software products or service updates without the required software, a system message displays the names of required software.

root user authority. The unrestricted ability to access and modify any part of the operating system, usually associated with the user who manages the system.

root volume group (rootvg). A volume group containing the Base Operating System (BOS). See also *migration installation.*

server. On a network, the computer that contains the data or provides the facilities to be accessed by other computers on the network.

service update. Software that corrects a defect in or adds new function to the Base Operating System (BOS) or to an optional software product. See also *maintenance level update*.

SMIT. See *System Management Interface Tool*.

software. Programs, procedures, rules, and any associated documentation pertaining to the operation of a system. Contrast with *hardware*.

source. A system, a program within a system, or a device that makes a request to a target. Contrast with *target*.

special file. Used in the operating system to provide an interface to input/output devices. There is at least one special file for each device connected to the computer. Contrast with *directory* and *file*.

stacked tape. A bootable tape with multiple software images.

System Management Interface Tool (SMIT). A set of menu–driven services that facilitates the performance of such system tasks as software installation and configuration, device configuration and management, problem determination, and storage management. SMIT is provided in both a character–based curses interface and an AIXwindows–based graphical user interface.

target. A system, a program within a system, or a device that interprets, rejects, or satisfies, and replies to requests received from a source. Contrast with *source*.

Transmission Control Protocol/Internet Protocol (TCP/IP). A communications subsystem that allows you to set up local area and wide area networks.

Universal Coordinated Time (UCT). The new standard term for worldwide time–telling that has the same meaning as Greenwich Mean Time.

update. See *service update*.

upgrade. Software that fixes a defect in a previously released software product.

verify. The verify procedure instructs the system to verify the software you are installing. The system confirms that your software files are the correct length and contain the correct number of digits and characters. If any errors are reported, it might be necessary to install the software product again. The verification process can add a significant amount of time to the installation process.

volume group (VG). A set of one or more physical volumes from which space can be allocated to one or more logical volumes. A collection of 1 to 32 physical volumes (read–write fixed–disk drives) of varying size and type. See also *logical volume*.

Web–based System Manager. A graphical user interface (GUI) tool for managing AIX systems. Based on the OO (Object Oriented) model, Web–based System Manager enables users to perform administration tasks by manipulating icons representing objects in the system, as an alternative to learning and remembering complex AIX commands.

Appendix F. Related Information

This section lists titles that provide more information about concepts and procedures covered in *AIX 4.3 Installation Guide*.

System Release Bulletin (SRB) provides release-specific information and instructions related to software installation. It also contains information it is important to be aware of, such as known limitations or special operational notes.

Backup Files and Storage Media Overview in *AIX 4.3 System User's Guide: Operating System and Devices* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

Setting Up and Running Web-based System Manager in *AIX 4.3 System Management Guide: Operating System and Devices* explains the structure of, and tasks that can be done with, Web-based System Manager.

Using Web-based System Manager in *AIX 4.3 Quick Beginnings* provides further detail about using Web-based System Manager.

System Management Interface Tool (SMIT) Overview in *AIX 4.3 System Management Guide: Operating System and Devices* explains the structure of, and tasks that can be done with, SMIT.

Accessing Online Information in *AIX 4.3 Quick Beginnings* explains how to view the AIX documentation.

Documentation Library Service in *AIX 4.3 System Management Guide: Operating System and Devices* contains further information about the SWsym.AIX

File Systems Overview in *AIX 4.3 System Management Guide: Operating System and Devices* provides information on file system types and management.

Logical Volume Storage Overview in *AIX 4.3 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 *AIX 4.3 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 *AIX 4.3 System Management Guide: Communications and Networks* explains the basic functions of TCP/IP, including Internet.

Network File System (NFS) Overview for System Management in *AIX 4.3 System Management Guide: Communications and Networks* discusses NFS daemons, commands, files, network services, and implementation.

Problem Solving Overview in *AIX Version 4.3 Problem Solving Guide and Reference* discusses ways to investigate, define, and fix system problems.

The following commands in *AIX Commands Reference*: **installp**, **lppchk**, **lslpp**, **mksysb**, **backup**, **ls**, **smit**.

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Titre / Title : Bull AIX 4.3 Installation Guide

Nº Reférence / Reference Nº : 86 A2 43GX 05

Daté / Dated : October 1999

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NOM / NAME : ______________________________ Date : __________

SOCIETE / COMPANY : ______________________________

ADRESSE / ADDRESS : ______________________________

____

PHONE / TELEPHONE : ____________________ FAX : ____________________

E–MAIL : ______________________________

For Bull Subsidiaries / Pour les Filiales Bull :
Identification: ______________________________

For Bull Affiliated Customers / Pour les Clients Affiliés Bull :
Customer Code / Code Client : ______________________________

For Bull Internal Customers / Pour les Clients Internes Bull :
Budgetary Section / Section Budgétaire : ______________________________

For Others / Pour les Autres :
Please ask your Bull representative. / Merci de demander à votre contact Bull.

PLACE BAR CODE IN LOWER LEFT CORNER

BULL ELECTRONICS ANGERS
CEDOC
34 Rue du Nid de Pie – BP 428
49004 ANGERS CEDEX 01
FRANCE

ORDER REFERENCE
86 A2 43GX 05

Bull

Utiliser les marques de découpe pour obtenir les étiquettes.
Use the cut marks to get the labels.

AIX
AIX 4.3 Installation Guide

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