

AIX Version 3.2 for RISC System/6000™

SC23-2341-05

Installation Guide





AIX Version 3.2 for RISC System/6000™

SC23-2341-05

Installation Guide

Sixth Edition (June 1992)

This edition of the *IBM AIX Version 3.2 for RISC System/6000 Installation Guide* applies to IBM AIX Version 3.2 for RISC System/6000 Licensed Program and to all subsequent releases of this product until otherwise indicated in new releases or technical newsletters.

The following paragraph does not apply to the United Kingdom or any country where such provisions are inconsistent with local law: INTERNATIONAL BUSINESS MACHINES CORPORATION PROVIDES THIS MANUAL "AS IS" WITHOUT WARRANTY OF ANY KIND, EITHER EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not allow disclaimer of express or implied warranties in certain transactions; therefore, this statement may not apply to you.

IBM does not warrant that the contents of this publication or the accompanying source code examples, whether individually or as one or more groups, will meet your requirements or that the publication or the accompanying source code examples are error-free.

This publication could include technical inaccuracies or typographical errors. Changes are periodically made to the information herein; these changes will be incorporated in new editions of the publication. IBM may make improvements and/or changes in the product(s) and/or the program(s) described in this publication at any time.

It is possible that this publication may contain references to, or information about, IBM products (machines and programs), programming, or services that are not announced in your country. Such references or information must not be construed to mean that IBM intends to announce such IBM products, programming, or services in your country. Any reference to an IBM licensed program in this publication is not intended to state or imply that you can use only IBM's licensed program. You can use any functionally equivalent program instead.

Requests for copies of this publication and for technical information about IBM products should be made to your IBM Authorized Dealer or your IBM Marketing Representative.

A reader's comment form is provided at the back of this publication. If the form has been removed, address comments to IBM Corporation, Internal Zip 9630, 11400 Burnet Road, Austin, Texas 78758-3493. IBM may use or distribute whatever information you supply in any way it believes appropriate without incurring any obligation to you.

IBM is a registered trademark of International Business Machines Corporation.

© Copyright International Business Machines Corporation 1987, 1992. All rights reserved.

Notice to U.S. Government Users - Documentation Related to Restricted Rights - Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corporation.

Trademarks and Acknowledgements

The following trademarks and acknowledgements apply to this information:

AIX is a trademark of International Business Machines Corporation.

AIX/RT is a trademark of International Business Machines Corporation.

AIXwindows is a trademark of International Business Machines Corporation.

AIX/370 is a trademark of International Business Machines Corporation.

Apollo is a trademark of Apollo Computer, Inc.

Application System/400 is a trademark of International Business Machines Corporation.

AS/400 is a trademark of International Business Machines Corporation.

CICS is a trademark of International Business Machines Corporation.

Connect is a trademark of INTERACTIVE Systems Corporation.

C/2 is a trademark of International Business Machines Corporation.

DEC is a trademark of Digital Equipment Corporation.

DEC VT100, VT220, VT320, and VT330 are trademarks of Digital Equipment Corporation.

Display PostScript is a trademark of Adobe Corporation.

GL is a trademark of Iris Graphics Library.

graPHIGS is a trademark of International Business Machines Corporation.

GSS is a trademark of Graphic Software Systems, Inc.

GSS-GRAFSTATION is a trademark of Graphic Software Systems, Inc.

Hayes is a trademark of Hayes Microcomputer Products, Inc.

HP is a trademark of Hewlett-Packard Company.

HP-GL is a trademark of Hewlett-Packard Company.

IBM is a registered trademark of International Business Machines Corporation.

INed is a trademark of INTERACTIVE Systems Corporation.

InfoExplorer is a trademark of International Business Machines Corporation.

InfoTrainer is a trademark of International Business Machines Corporation.

IRIS, Geometry Link, Geometry Partners, Geometry Engine, and Geometry Accelerators are trademarks of Silicon Graphics, Inc.

LaserJet Series II is a trademark of Hewlett Packard Inc.

Micro Channel is a trademark of International Business Machines Corporation.

Microline is a trademark of Okidata Corporation.

MONITERM is a trademark of Moniterm Corporation.

Motif is a trademark of Open Software Foundation, Inc.

NETBIOS is a trademark of International Business Machines Corporation.

NetView is a trademark of International Business Machines Corporation.

Network Computing System is a trademark of Apollo Computer, Inc.

NFS and Sun OS are trademarks of Sun Microsystems, Inc.

Operating System/2 and OS/2 are trademarks of International Business Machines Corporation.

OSF and OSF/Motif are trademarks of Open Software Foundation, Inc.

PC XT is a trademark of International Business Machines Corporation.

Personal Computer AT and AT are trademarks of International Business Machines Corporation.

Personal graPHIGS is a trademark of International Business Machines Corporation.

Personal System/2 and PS/2 are trademarks of International Business Machines Corporation.

POSIX is a trademark of the Institute of Electrical and Electronic Engineers (IEEE).

PostScript is a trademark of Adobe Systems Incorporated.

RISC System/6000 is a trademark of International Business Machines Corporation.

RT is a trademark of International Business Machines Corporation.

SNA 3270 is a trademark of International Business Machines Corporation.

Systems Application Architecture and SAA are trademarks of International Business Machines Corporation.

UNIX is licensed by and is a registered trademark of UNIX System Laboratories, Inc.

WYSE is a trademark of the WYSE Corporation.

WYSE 30, WYSE 50, WYSE 60, and WYSE 350 are trademarks of WYSE Corporation.

Xstation Manager is a trademark of International Business Machines Corporation.

X Window System is a trademark of Massachusetts Institute of Technology.

X/OPEN is a trademark of X/OPEN Company Limited.

Help Information

The software installation process for your RISC System/6000 is designed to be simple and trouble free. Using the procedures in this installation guide, you should have no problem installing the AIX Version 3.2 Base Operating System and optional software products. However, if you are uncomfortable performing initial software installation, or if you have a problem once you begin the process, help is available.

IBM Support Structure Information

Following are some contacts for reporting various types of system problems:

World Trade Customers: Contact your country's IBM support structure.

United States Customers:

For installation and "How to" information

If you purchased your system directly from IBM, contact your IBM branch office systems engineer. If you purchased your system from an IBM business partner, please contact your IBM business partner.

RISC System/6000 hardware Contact IBM hardware support at 1-800-IBM-SERV.

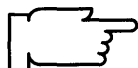
Software defects Contact IBM support center at 1-800-237-5511.
Read "Reporting Software Defects" in "Chapter 21. Recovery Procedures" for generating test cases and system information files that you may be asked to submit to your support centers.

About This Book

The *IBM AIX Version 3.2 for RISC System/6000 Installation Guide* describes how to install Version 3.2 of the AIX Base Operating System on a RISC System/6000. The *Installation Guide* discusses the different ways to install AIX on your system and then guides you through the installation procedure in a step-by-step manner. Among other things, this book also describes how to install or update optional software, create a network installation server, create a diskless community, mount InfoExplorer, and configure a network.

How This Book Is Organized

The installation process allows a number of different ways to install the AIX Base Operating System (BOS) on a RISC System/6000. The section titled “Where Do I Go in This Manual” points you to the chapter where you should go to begin installing the software.



Note: In order to determine the proper starting point for the type of installation you want to perform, be sure to read “Where Do I Go in This Manual” which immediately follows the Table of Contents.

Part I — Installation Procedures

Part 1 presents the procedures for installing your AIX Version 3.2 Base Operating System, optional software products, and service updates.

- Chapter 1. Starting a Preloaded System for the First Time
- Chapter 2. BOS Installation from CD-ROM, Tape, Diskette
- Chapter 3. Installation from a System Backup
- Chapter 4. BOS Installation from Network
- Chapter 5. BOS Installation for Use with a /usr Server
- Chapter 6. Optional Software Installation
- Chapter 7. Service Updates Installation
- Chapter 8. Post-Installation Procedures
- Chapter 9. Creating an Installation Server
- Chapter 10. Diskless System Installation

Part II — Supplementary Procedures

Part II contains procedures for tasks which support the process of installing AIX.

- Chapter 11. Creating BOSboot Diskettes
- Chapter 12. Viewing README Files
- Chapter 13. Mounting the InfoExplorer CD-ROM
- Chapter 14. Network Configuration
- Chapter 15. Backing Up Your System

Part III — Reference Information

Part III includes reference information to help you with the installation procedures.

- Chapter 16. Planning
- Chapter 17. Product Information
- Chapter 18. Hardware Basics
- Chapter 19. SMIT Basics
- Chapter 20. System Messages
- Chapter 21. Recovery Procedures
- Chapter 22. Notes

A Glossary, Index, and Reader’s Comment Form are located at the back of this book.

How to Use This Book

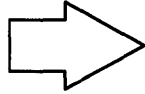
Graphic Aids

The chapters in this book contain the following graphic aids to simplify the instructions:

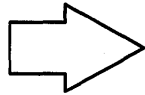
- Sample screens
- Icons identifying your installation media

Sample screens are shown throughout the procedural chapters so that you can verify that you have reached the correct step. However, the screens may not be *identical* to what you see on your system. Some of the information on the sample screens will vary according to the particular configuration of your system, but the sample screens should be *similar* to what you see on your computer display.

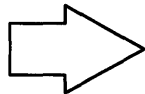
The procedural chapters also use *icons* to distinguish special instructions for users who are installing from different media. These icons identify special instructions for your installation media, and help you skip over information you do not need. The following graphics are used to identify the different installation media:



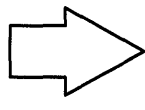
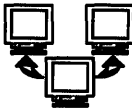
Identifies special instructions for CD-ROM.



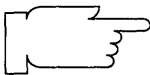
Identifies special instructions for 8mm or 1/4 inch tape.



Identifies special instructions for diskettes.



Identifies special instructions for users who are installing over a network.



Identifies very important instructions or warnings. Do not skip over notes, cautions, or warnings that follow this icon.

For example, if you are installing from tape, you follow the steps with a tape icon next to them. You can skip directions that are marked with one of the other icons. Focusing on the icon for your installation media helps you move through the directions more rapidly.

Highlighting

The following highlighting conventions are used in this book:

- Bold** Identifies commands, key words, files, directories, and other items whose names are predefined by the system.

<i>Italics</i>	Identifies parameters whose actual names or values are to be supplied by the user. Sometimes italics are used to <i>emphasize</i> an important word or phrase.
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.

Related Publications

The following book contains information about or related to the installation of Version 3.2 of the AIX Base Operating System:

- *IBM AIX Version 3.2 for RISC System/6000 Upgrade Utilities Guide for Upgrading AIX Version 3.1.x to Version 3.2*, Order Number SC23-2441.

Ordering Additional Copies of This Book

To order additional copies of this book, use Order Number SC23-2341.

To order additional copies of this book and all associated publications (including the *Upgrade Utilities Guide* and any Technical Newsletters), use Order Number SBOF-1803.

Suggested Reading

Additional sources of information are available to help you during software installation. The following information is available in book form, and online:

- Online Helps Help information for the System Management Interface Tool (SMIT) is available as soon as the AIX Base Operating System is installed.
- IBM RISC System/6000 Problem Solving Guide*
Contains information on how to identify and correct system problems. It is available in book form and on InfoExplorer.
- InfoExplorer Your primary source of information is InfoExplorer. InfoExplorer is an online hypertext library containing thousands of pages of information about software and hardware. Once the AIX Base Operating System is installed, InfoExplorer can be installed.
- InfoTrainer Within InfoExplorer is a set of on-line tutorials called InfoTrainer. InfoTrainer contains lessons and interactive exercises for new users.

Related Information

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The TCP/IP Overview for System Managers in *Communication Concepts and Procedures* explains the basic functions of TCP/IP, including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

Getting Started: Using RISC System/6000.

Getting Started: Managing RISC System/6000.

IBM RISC System/6000 Quick Reference.

IBM RISC System/6000 Problem Solving Guide.

AIX Commands Reference for IBM RISC System/6000.

Table of Contents

Where Do I Go in This Manual?	0-1
Part I. Installation Procedures	
Chapter 1. Starting a Preloaded System For The First Time	1-1
Chapter 2. BOS Installation from CD-ROM, Tape, or Diskette ..	2-1
Chapter 3. Installation from a System Backup	3-1
Chapter 4. BOS Installation from Network	4-1
Chapter 5. BOS Installation for Use with a /usr Server	5-1
Chapter 6. Optional Software Installation	6-1
Chapter 7. Service Updates Installation	7-1
Chapter 8. Post-Installation Procedures	8-1
Chapter 9. Creating an Installation Server	9-1
Chapter 10. Diskless System Installation	10-1
Part 1: Creating a Diskless Server	10-3
Part 2: Creating a non-AIX Diskless Server	10-32
Part 3: Install and Update Optional Software	10-44
Part 4: Starting a Diskless Client for the First Time	10-60
Part II. Supplementary Installation Procedures	
Chapter 11. Creating BOSboot Diskettes	11-1
Chapter 12. Viewing README Files	12-1
Chapter 13. Mounting the InfoExplorer CD-ROM	13-1
Chapter 14. Network Configuration	14-1
Configure TCP/IP	14-2
Configure NFS	14-10
Configure a NFS Server	14-13
Configure a NFS Client	14-15
Chapter 15. Backing Up Your System	15-1

Part III. Reference Information

Chapter 16. Planning	16-1
BOS Installation Plan	16-2
TCP/IP Configuration Plan	16-13
NFS Client Configuration Plan	16-16
Creating File Systems Plan (Installing the Operating System)	16-18
Creating File Systems Plan (Using the Server's /usr)	16-20
Adding a Diskless Client Plan	16-22
Optional Software Installation Plan	16-24
Chapter 17. Product Information	17-1
Understanding Option Names	17-2
Base Operating System (BOS)	17-5
Base System Locales	17-6
Base System Messages	17-8
InfoExplorer Databases for Version 3.2	17-9
INed	17-11
Base Application Development Toolkit	17-12
BOSEXT1	17-14
BOSEXT2	17-16
Base Operating System Network Facilities (BOSNET)	17-19
Text Formatting Services	17-22
HANFS (High Availability for Network File Systems)	17-24
Data Encryption Standards Library Routines (U.S. only)	17-26
Extended License Information Package	17-27
DOS Server	17-28
XL C Compiler	17-29
FDDI	17-30
Block Multiplexer Channel Connectivity	17-31
AIXwindows Environment	17-32
AIXwindows Interface Composer	17-38
VS COBOL Compiler	17-41
VS COBOL Run Time Environment	17-42
3278/79 Emulation	17-43
3270 Host Connection Program	17-44
InfoCrafter	17-46
NetWare	17-47
PC Simulator	17-48
SNA Services	17-50
Network Management	17-53
Computer Graphics Interface Toolkit	17-57
Graphics File Translator	17-58
Graphics Plotting System	17-59
Xstation Manager	17-60
XL FORTRAN Compiler	17-62
XL FORTRAN Run Time Environment	17-63
XL PASCAL Compiler	17-64
XL Pascal Run Time Environment	17-66
Ada	17-67

Ada Run Time Environment	17-69
Open Systems Interconnection Messaging and Filing (OSIMF)	17-70
ESSL	17-72
Chapter 18. Hardware Basics	18-1
System Unit Key Switch	18-1
System Unit Power Switch	18-2
Reading the Three-Digit LED Display	18-2
Using the Reset Button	18-3
Adjusting the Display Screen	18-3
Logging In	18-4
Logging Off	18-4
Chapter 19. SMIT Basics	19-1
Using SMIT in the ASCII Interface	19-1
Menu Screens	19-2
Dialog Screens	19-3
Understanding Dialog Symbols	19-3
Navigating SMIT Dialogs	19-4
Function Keys	19-4
Command Status Screens	19-6
Chapter 20. System Messages	20-1
Chapter 21. Recovery Procedures	21-1
Recovering from a Remote /usr Mount Failure	21-2
Accessing a System That Will Not Boot	21-4
Cleanup Procedure after a Failed Optional Software Installation	21-11
Reporting Software Defects	21-15
Chapter 22. Notes	22-1

Where Do I Go in This Manual?

The installation process has been designed to allow a number of different ways to install software. This chapter points you to the chapter in this manual that you should use to begin installing your software.

Note: Before you can install your software, the hardware installation for your system must be complete.

If Version 3.1.x is already installed on your system and you want to install Version 3.2 to upgrade your system, you need to begin the upgrade process by reading the *Upgrade Utilities Guide* that was inserted into “Chapter 22. Notes” of this book. When the *Upgrade Utilities Guide* tells you to return to this *Installation Guide*, return to this page and continue with the first sentence after this box. If you do not own the Version 3.1.x, the Upgrade Utilities are unnecessary and therefore they were not shipped to you. In this case, you should simply continue your reading with the first sentence after this box.

Determining Your Starting Point

Answer the following questions until you reach a “Go to” reference to a chapter in this manual. Then go to that chapter and begin installing the software.

Note: Keep in mind that some chapters in this manual are designed to help you if you run into difficulties during the installation procedures. “Chapter 20. System Messages,” for example, explains the error messages, and “Chapter 21. Recovery Procedures” describes how to recover from installation failures.

1. A *preloaded system* comes from the manufacturer with the Version 3.2 Base Operating System (BOS) already installed on the hard disk. You do *not* need to install the BOS on a preloaded system.

Is this a new system that was preloaded with software at the factory?

YES: Go directly to “Chapter 1. Starting a Preloaded System For the First Time”.

NO: Go to question 2.

2. A *standard workstation* is a workstation that can boot (start up) by itself. It may or may not be on a network. However, if it is on a network, it does not need the assistance of a server to boot. A *diskless workstation* is a workstation that cannot boot (start up) by itself. It must use a remote server workstation to boot. A diskless workstation may have disk drives installed, but it doesn't boot from them.

What kind of workstation are you installing?

STANDARD: Go to question 3.

DISKLESS: Go directly to “Chapter 10. Diskless Systems Installation.”

3. Is the Version 3.2 Base Operating System installed on your system?

YES: Go to question 6.

NO: Go to question 4.

4. You can install all of the Base Operating System (BOS), or you can install a portion of the Base Operating System (BOS) and remotely access the **/usr** file system. The **/usr** file system contains common executable software that can be shared across the same architecture. When you install a portion of BOS, only the **/** (root) file system and the information necessary to start the system are installed. The **/usr** file system is not installed.

Do you want to install *all* of BOS on your system or just a *portion* of BOS and use the **/usr** file system from a **/usr** server?

ALL OF BOS: Go to question 5.

PORTION OF BOS: Go to "Chapter 5. BOS Installation for Use with a **/usr** Server."

5. Is the BOS to be installed a *backup image* (an image which was customer created with the procedures in "Chapter 15. Backing Up Your System")?

YES: Go to "Chapter 3. Installing from a System Backup."

NO: What is the source of the BOS software that you want to install?

A . CD-ROM, TAPES, DISKETTES (or copies): Go to "Chapter 2. BOS Installation from CD-ROM, Tape, or Diskette."

B . NETWORK: Go to "Chapter 4. BOS Installation From a Network."

6. Do you want to install only service updates (a Selective Fix or a Preventive Maintenance Package)?

YES: Go to "Chapter 7. Service Updates Installation."

NO: Go to question 7.

7. Do you want to install Optional Software Products?

YES: Go to "Chapter 6. Optional Software Installation."

NO: This is the end of the "Where Do I Go in This Manual?" question tree. You have either answered one of the questions incorrectly, or the procedure you want to perform is not included in this tree. You may want to search for the procedure you are looking for in the Table of Contents or the Index of this manual.

Part I. Installation Procedures

Chapter 1. Starting a Preloaded System For The First Time



Note: If you have not read “Where Do I Go To in This Manual?,” please do so now. This book contains different starting points according to the type of installation you need to perform. The section titled “Where Do I Go To in This Manual?” will point you to the chapter that contains the procedure you need. If it sent you to this chapter, continue with the next paragraph.

This chapter describes how to start a preloaded system for the first time. When a new preloaded system arrives, it may contain both preinstalled and preloaded software. Most of the software is *preinstalled*. Preinstalled software is ready to use. *Preloaded* software may also be on the hard disk. Preloaded software is in a compressed format so that it takes up less disk space. It must be installed (during which it expands) before it can be used.

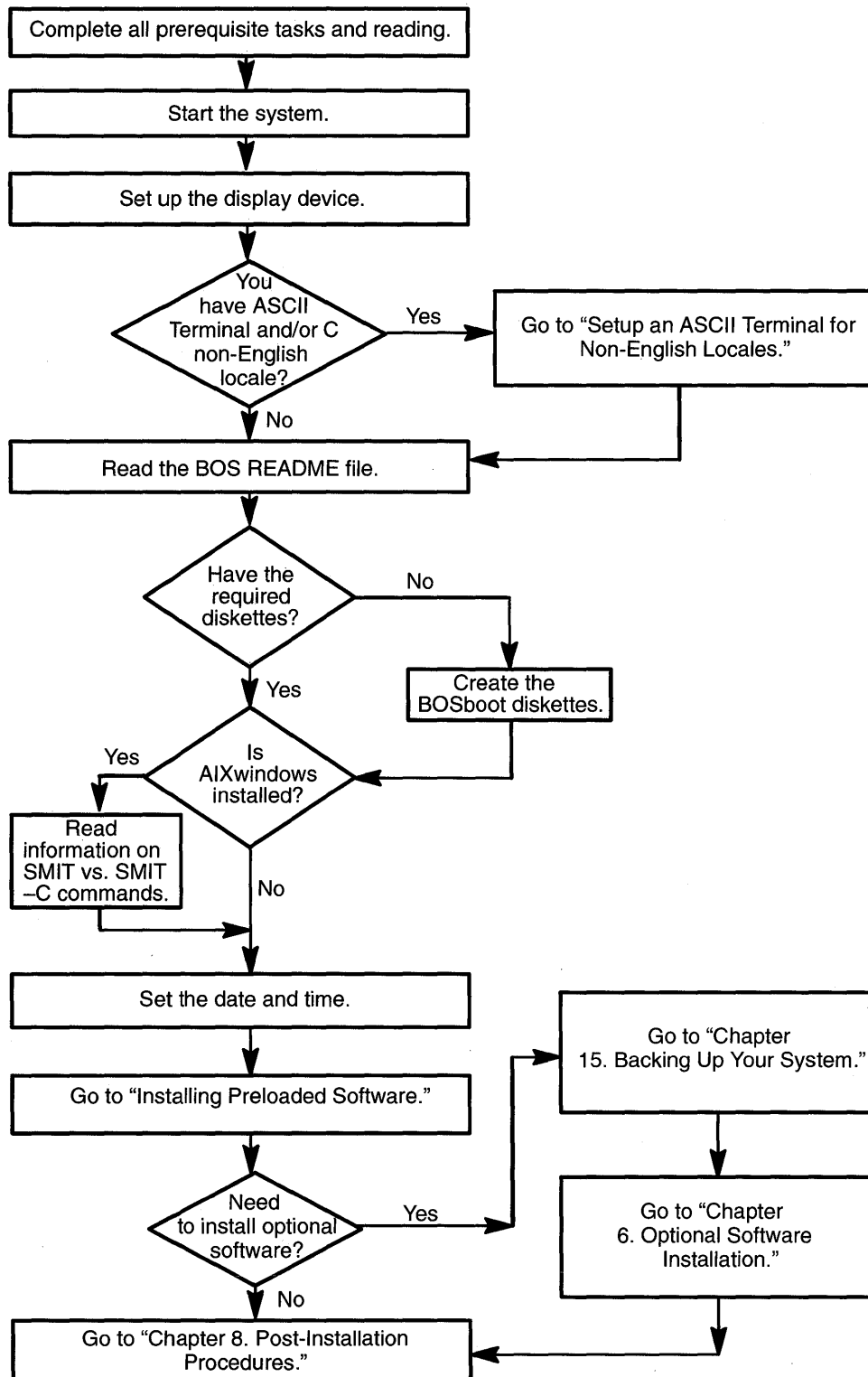
Why is some software preloaded and not preinstalled? Because some parts (options) of software products are only used by software programmers. Nonprogrammers may not need these software production tools. So, they are left in a preloaded format so that they will not take up as much disk space. If you do need to use these preloaded options, they can be installed after you complete the procedures in this chapter.

For example: If you ordered Version 3.2, then the Version 3.2 Base Operating System (BOS) Runtime part of the product is always preinstalled. The BOS Extensions options are only preloaded. If you ordered the AIXwindows Environment product, then AIXwindows Runtime, is preinstalled. But the AIXwindows Development Toolkit is only preloaded.

The following table illustrates some of the software on a preloaded system where Version 3.2 and the AIXwindows Environment was ordered:

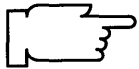
Product	Preinstalled	Preloaded (must be installed)
The Operating System	Base Operating System Base Networking System Text Formatting Services INed Editor	BOS Extensions 1 BOS Extensions 2 Base Application Development Toolkit
AIXwindows Environment	AIXwindows Runtime Environment	AIXwindows Development Toolkit

Flow Chart for Starting a Preloaded System



Prerequisite Tasks or Conditions

1. The procedures in this chapter are for use on a preloaded system. On a preloaded system, the Base Operating System (BOS) is preinstalled; other software may also be preinstalled or preloaded on the hard disk. If your system is not a preloaded system, you can find your proper installation chapter by referring to section titled “Where Do I Go in This Manual?” which immediately precedes Part I.
2. All hardware should already be installed. This includes any external devices such as external tape drives.
3. You should be familiar with the procedures for operating your hardware. If you are not familiar with your hardware, read “Chapter 18. Hardware Basics”
4. In this chapter you will be using the System Management Interface Tool (SMIT) to install optional software. If you are not familiar with SMIT, read “Chapter 19. SMIT Basics,” then return here and continue with step 5.
5. Locate the key for the key lock on your system unit.
6. The system unit power is OFF.



Note: It is important that you do *not* turn on the system unit until instructed to do so.

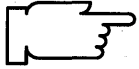
Procedural Overview

This chapter contains the procedures for the following tasks:

- A . Start your system
- B . Set up the display device
- C . Set up an ASCII Terminal
- D . Read the BOS README file
- E . Create the BOSboot diskettes
- F . Set the date and time
- G . Install preloaded software.

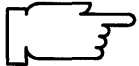
A. Start Your System

1. Turn the System key to the NORMAL position. Do not turn on the system unit.



Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order, so the system unit can properly identify the attached devices during the startup (boot) process.

2. Turn on all attached external devices, such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit.



Note: If you are using an ASCII terminal, make sure that the terminal's line speed (baud rate) = 9600, word length (bits per character) = 8, parity = no (none), and number of stop bits = 1.

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 the attributes. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set the attributes.

3. Turn the system unit power switch to the ON position.
4. A series of codes will immediately appear on the three-digit LED display. On some systems, you may have to flip open a plastic door to see the three-digit LED display. The screen may stay blank for several minutes. Then, c31 may appear on the three-digit LED display and each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.

If c31 is displayed in the three-digit LED display, press the specified keys only on the console that you want to use as your system console.

5. At the login prompt, type the following:

```
root
```

and press Enter.



Note: If AIXwindows is installed, AIXwindows will appear after you press Enter. Use your mouse to move the cursor inside the aixterm window and then click the left mouse button one time. This will activate the window so you can begin typing.

Your system is now started and you are logged in as the root user.

6. If you are using AIXwindows skip to section "D. Read the BOS README" on page 1-9. If you are *not* using AIXwindows, go to the next section, "B. Set Up the Display Device."

B. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the `TERM` variable. You now need to check the `TERM` variable to see if it is correctly set.

1. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the “type” or “model” number on a plate on the front or back of the display.

2. To see what display name is stored in `TERM`, type the following:
(note that only `TERM` should be typed in capital letters)

```
echo $TERM
```

and press Enter.

The system responds with the name of the type of display the system thinks you are using.

3. Look at the possible responses to **echo TERM** command to see what you should do next:

If `TERM = dumb`

The system was unable to automatically recognize your display. You must manually set the display name. Go to step 4.

If `TERM = hft`

And you are using an hft such as a model 5081, 6091, or 8508, go to the section “D. Read the BOS README File” on page 1-9. If you are not using an hft, go to step 4.

If `TERM = a model number`

Such as `ibm3151` and the number is correct, go to section “C. Set up an ASCII Terminal for Non-English Locales” on page 1-7. If the number is wrong, go to step 4.

4. Use the following procedures to manually set the `TERM` name.
 - a. If you are using a VT100 terminal, your `TERM` name is `vt100` and you must skip to step d. If you are *not* using a VT100, continue with step b.
 - b. Display names must be typed in a specific format. To see the terminfo list of the valid display names, type the following:
(where `x` is the first letter of the name of the manufacturer or type of your display. For example, if you have an IBM display, you would type the following:

```
ls /usr/share/lib/terminfo/i where i stands for IBM.)
```

```
ls /usr/share/lib/terminfo/x
```

and press Enter.
 - c. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether or not the letters are capitalized. For example, for a model 3151 display, the list will show `ibm3151` as the correct display name.

- d. Type the following:
(where `xxx` is the exact display name that you copied from the terminfo list.)

```
export TERM=xxx
```

and press Enter.

For example, if you are using a 3151, you would type `export TERM=ibm3151` and then press Enter.

5. The `TERM` name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step d. every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The character string after the second `/` is the device name. In this example, it is `tty0`. (Note that the last character in this example is a zero, *not* the letter `o`).

- b. Type the following:

(where `xxx` is the display name you used in step 4d and `zzz` is the tty device name you found in step 5a. **Note:** The `-l` in this command is a lowercase `l` and that `term` is in lowercase letters.)

```
chdev -a term=xxx -l zzz
```

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter.

The system responds with `tty0 changed`.

Your terminal should now be set correctly. Continue with the next section, "C. Setup an ASCII Terminal for Non-English Locales."

C. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments.)

If you are using an hft such as a model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the section "D. Read the BOS README File" on page 1-9.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE

1. To see what locale (language) is stored in the LANG variable, type the following:

(where LANG is in capital letters)

```
echo $LANG
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

C			(POSIX)
en_GB	or	En_GB	(Great Britain)
en_JP	or	En_JP	(Japan)
en_US	or	En_US	(United States)

YES: the system displayed one of the above locales, go to the next section "D. Read the BOS README File" on page 1-9.

NO: the system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo LANG** command a *lower* case letter?

YES: it's a *lower* case letter, go to the next section, "D. Read the BOS README File" on page 1-9.

NO: it's an *upper* case letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the ".in" suffix. Make careful note on whether or not the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see what tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname the tty device. For example, it may display `/dev/tty0`. The character(s) after `/dev/tty` is the number identifying your tty device.

7. To set the input and output map files, type the following:
(where `-l` is a lower case "L", `x` is the number identifying your tty from step 6 and `mapfile` is the name you wrote down from the termmap listing in step 5.)

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:
 - a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section "D. Read the BOS README File."

D. Read the BOS README File

A README file is an online document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software. It is important that you read the installation section of the BOS README file before you continue. This section will list any changes that you should make to the procedures in the rest of this chapter.

As you read the README file, write any corrections into this manual.

PROCEDURE

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:

(Note: there are no blank spaces in the following command.)

```
/2.Installation
```

and press Enter.

4. The installation notes appear.

To show the next page Press Enter

To show the previous page Type -1 and press Enter.

Read the notes and write the specified corrections into this manual.

5. When you are finished with the installation section, type the following at the colon (:) prompt:

```
q
```

and press Enter.

The system prompt (#) reappears.

6. Continue with the next section of this manual "E. Create the BOSboot Diskettes" on page 1-10.

E. Create the BOSboot Diskettes

In order to maintain your Version 3.2 Base Operating System (BOS) after it is installed, you will need the following BOSboot diskettes:

- Boot diskette — This is used to start (boot) your system from your diskette drive in case your system can no longer boot itself from the hard disk.
- Display diskette — This is used to set up your display device.
- Install/maintenance diskette — Contains a subset of the system commands that are used to install software and solve system problems.
- Display Extensions diskette — This is an additional display diskette that is needed *only* if you have one of the following graphics adapters installed in your system:
 - POWER Gt3 Midrange graphics adapter
 - POWER Gt4 Midrange graphics adapter
 - POWER Gt4x Midrange graphics adapter
 - High Speed 3D Graphics Accelerator
 - Any other graphics adapter

To determine if you have the graphics adapters installed in your system, you can use the `lsdev -Cs mca` command to check your system hardware list or refer to your “About Your Machine” document.

If you purchased copies of these diskettes when you ordered your system, you can skip to the section titled “If You Have AIXwindows Installed” on page 1-12. If you did not purchase these diskettes then you need to make your own copies. This section shows you how to create these diskettes.



Note: Special notice for Kanji (Japanese locale) Users: You do not need to create these diskettes. Kanji systems use the standard National Language Services diskettes to boot and install the Version 3.2. Kanji users should skip to the section titled “If You Have AIXwindows Installed” on page 1-12.

These diskettes will be version-specific. They will only work with a copy of BOS that has the same version number as the BOS that created them.

PROCEDURE

1. Format four blank diskettes, if you are using a graphics adapter that requires the BOS Display Extensions diskette. If you are not using one of these adapters, you only need to format three diskettes.

Note: The diskettes must have a minimum capacity of 1.44 megabytes.

- a. At the system prompt (#), type the following:

```
format
```

and press Enter.

- b. When prompted on-screen, insert a blank diskette into the diskette drive and press Enter.

- c. When the formatting is done the message `Format completed` appears and the system prompt (`#`) reappears. Remove the diskette.
 - d. Repeat steps a through c until all of the diskettes are formatted and then continue to step 2.
2. To create the BOS Boot diskette, take the following steps:
 - a. Insert a formatted diskette into your diskette drive.
 - b. Type the following (Note that the last character in the line is a zero.):


```
bosboot -a -d fd0
```
 - c. and then press Enter.
 - d. After a minute, system messages appear on the display as the boot diskette is created.
 - e. When the system prompt (`#`) reappears, remove the diskette from the drive and label it "BOS Boot, Version 3.2." It is very important that you include the version numbers on the labels of these diskettes. These diskettes will only work on BOS that has the same version number.
 3. To create the BOS Display diskette:
 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:


```
mkdispdskt
```

 and then press Enter.
 - c. The message `Mount Volume 1 on /dev/rfd0. Press Enter to Continue.` appears. Leave the diskette in the drive and press Enter.
 - d. After a minute system messages appear. When the system prompt (`#`) reappears, remove the diskette from the drive and label it "BOS Display, Version 3.2."
 4. To create the BOS Install/Maintenance diskette:
 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:


```
mkinstdskt
```

 and press Enter.
 - c. After a minute, system messages appear. When the system prompt (`#`) reappears, remove the diskette from the drive and label it "BOS Install/Maintenance, Version 3.2."
 5. If you do not need a BOS Display Extensions diskette, skip to step 6.

To create the BOS Display Extensions diskette:

 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:


```
mkextdskt
```

 and then press Enter.

- c. The message `Mount Volume 1 on /dev/rfd0. Press Enter to Continue.` appears. Leave the diskette in the drive and press `Enter`.
 - d. After a minute system messages appear. When the system prompt (`#`) reappears, remove the diskette from the drive and label it "BOS Display Extensions, Version 3.2."
6. Write-protect all of the diskettes that you have created by sliding the write-protect tab open.

You have finished creating the BOSboot diskettes (BOS Boot, Display, Install/Maintenance and, possibly, BOS Display Extensions). Go to the next section called "If You Have AIXwindows Installed."

If You Have AIXwindows Installed

If you do *not* have AIXwindows installed on this system you do not need to read this section. Skip to the next section called "F. Set the Date and Time" on page 1-13. Otherwise, continue with this section.

There are two versions of SMIT – an ASCII (text only) version and a Motif (graphical) version. If you are using an ASCII terminal, only ASCII SMIT can be used. If you have a graphical terminal and AIXwindows is installed, both ASCII and Motif SMIT are available. Since not all users have Motif SMIT, all of the instructions in this manual are written for use with ASCII SMIT.

When it is time to start SMIT, the instructions will tell you to type `smit`. However, if you are working inside AIXwindows, you should type `smit -C` instead of `smit`. This way you will get ASCII SMIT instead of the Motif SMIT that normally appears when you are using AIXwindows. As a result your screen menus will match the menus used in this guide.

Continue on to the next section called "F. Set the Date and Time" on page 1-13.

F. Set the Date and Time

1. At the system prompt (#), type the following:

```
date
```

and press Enter.

The system displays the date and time.



Note: Time on your system is expressed in terms of a 24-hour clock, often called “military time.” In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to the next section called “G. Installing Preloaded Software” on page 1-17.
- To change the date and time, go to step 2.

2. Type the following:

(or type `smit -C startup` if you are working in AIXwindows)

```
smit startup
```

and press Enter.

A screen similar to the following is displayed:

SYSTEM STARTUP MENU

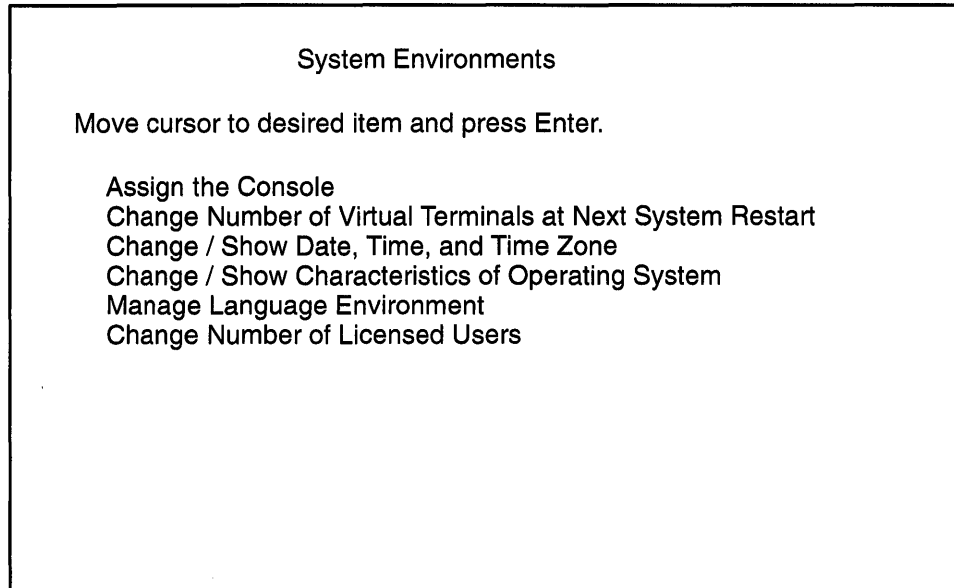
Your Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

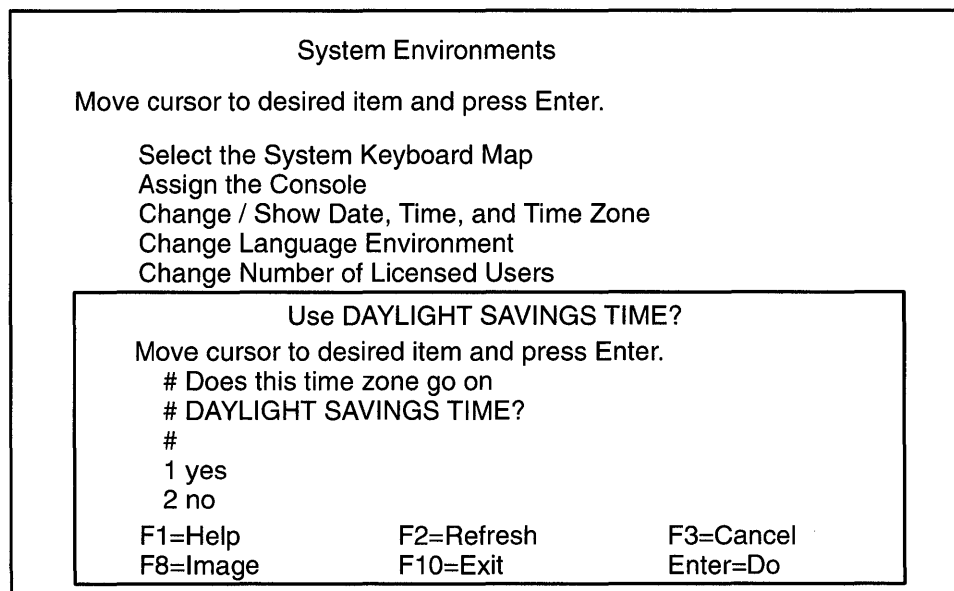
Backup the System
System Environments
Software Products
TCP/IP
NFS

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

3. Select **System Environments** and press Enter. A screen similar to the following is displayed:



4. Select **Change / Show Date, Time, and Time Zone** and press Enter. A screen similar to the following is displayed:



5. You have two choices:

- If your time zone uses daylight savings time, move the cursor to `yes` and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to `no` and press Enter.

A screen similar to the following is displayed:

System Environments

Move cursor to desired item and press Enter

CUT (Coordinated Universal Time) Time Zone

Move cursor to desired item and press Enter.

[TOP]

(CUT0GDT)	Coordinated Universal Time (CUT)	
(TZ 1DT1)	Azores; Cape Verde	(CUT -1)
(TZ 2DT2)	Falkland Islands	(CUT -2)
(TZ 3DT3)	Greenland; East Brazil	(CUT -3)
(AST4ADT)	Central Brazil	(CUT -4)
(EST5EDT)	Eastern U.S.; Columbia	(CUT -5)
(CST6CDT)	Central U.S.; Honduras	(CUT -6)

[MORE...12]

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

6. Move the cursor to highlight your time zone and press Enter. Use the up and down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following is displayed:

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all Desired changes.

[Entry Fields]

Old time zone	CST6CDT
Time Zone	CST6CDT
Does this time zone go on daylight savings time?	yes

* YEAR (00-99)	[91]
* MONTH (01-12)	[04]
* DAY (01-31)	[15]

* HOUR (00-23)	[11]
* MINUTES (00-59)	[32]
* SECONDS (00-59)	[05]

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

7. Move the cursor to the entry fields you want to change, and type the new information for each field. Do *not* press Enter until you have finished making changes.

Note: Remember that you must use the 24-hour clock format for the HOUR field.

When you press Enter, a screen similar to the following is displayed:

```

                                COMMAND STATUS
Command: OK          stdout: yes          stderr: no

Before completion, additional instructions may appear below

Mon Apr 15 11:32:05 CST 1991

Now exit SMIT and log out and then back in so that any changes to date,
time, and time zone will be reflected in your current session.

F1=Help      F2=Refresh    F3=Cancel    F6=Command
F8=Image     F9=Shell      F10=Exit
```

8. Press F10 to exit SMIT.
 - If you changed the time zone, go to step 9.
 - If you did *not* change the time zone, you have finished setting the date and time. Go to the next section called "G. Installing Preloaded Software" on page 1-17.
9. After changing the time zone, you must log off of the system and then log back in so that the new time zone can take effect.

Use the following procedure to log off and then log back into the system:

- a. If you are *not* using the AIXwindows Environment, go to step b. If you *are* using the AIXwindows Environment, hold down the left Ctrl key and the Alt key, and press the Backspace key. This takes you out of AIXwindows and displays the command line. It is normal for the system to display error messages after leaving AIXwindows. Continue with step b.

- b. At the system prompt, type the following:

```
exit
```

and press Enter to log out.

- c. The login prompt is displayed. Log back into the system by typing the following:

```
root
```

and then press Enter.

You have finished setting the date and time. Continue with the next section, "G. Installing Preloaded Software" on page 1-17.

G. Installing Preloaded Software

Some of your system's software was only preloaded at the factory. It was not fully installed.

1. If you want to see a list of the software that was preinstalled at the factory, type:

```
lslpp -l | pg
```

and then press Enter.

2. If you want to see a list of the software that was preloaded but has not yet been installed, type:

```
installp -ql -d /usr/sys/inst.images | pg
```

and then press Enter.

(The format of the list you see will be more fully explained in the optional software chapter.)

If you do *not* need to install any of the preloaded optional software, go to "Chapter 8. Post-Installation Procedures."

If you *do* want to install some of the preloaded software, it is recommended that you first backup your system using the procedures in "Chapter 15. Backing up Your System." Then go to "Chapter 6. Optional Software Installation."

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter: The **installp**, **tar**, and **ls** commands.

The Backup Overview in *General Concepts and Procedures* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *General Concepts and Procedures* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The file systems Overview in *General Concepts and Procedures* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *General Concepts and Procedures* provides information on mounting files and directories, mount points, and automatic mounts.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000*.

Using SMIT in *Getting Started: Managing the IBM RISC System/6000*.

IBM RISC System/6000 Problem Solving Guide.

Chapter 2. BOS Installation from CD-ROM, Tape, or Diskette

This chapter contains the procedures for installing the Version 3.2 Base Operating System (BOS). The chapter explains three different methods for installing BOS: New Installation, Preservation Installation, and Complete Overwrite Installation. The instructions are combined in one chapter because the procedures for the three types of installation are very similar. The differences in the procedures will be pointed out where they occur.

A *volume group* is one disk or a group of hard disks on your system. A *root volume group* is a group of hard disks in which the root portion of BOS is stored. This means that a root volume group can be used to boot (start up) your system. It is possible to have multiple root volume groups, but only one is necessary.

1. *New Installation* is performed when the hard disk or disks you are installing BOS onto are *empty*. A hard disk is empty if it does not contain any data or if it contains some data, but it does not contain a root volume group (it is not bootable).
2. *Preservation Installation* installs the Version 3.2 Base Operating System (BOS) and preserves the existing root volume group on your system. This method only overwrites the `/usr` (`/usr`), temporary (`/tmp`), `/var`, and root (`/`) file systems of the previously installed version. Use this installation procedure when a previous version of BOS is installed on your system and you want to preserve the root volume group, including your system configuration.

A Preservation Installation will automatically preserve only some of the data on your system (some of the contents of the root volume group). It will still be necessary for you to use the Upgrade Utilities (if you are installing over Version 3.1.x) or the System Management Interface Tool (SMIT) to finish restoring all of your system data.

3. *Complete Overwrite Installation* is used when a previous version of BOS is installed on your system, and you want to completely overwrite the existing version of BOS. This procedure may impair recovery of data or destroy all existing data on your hard drives.

Use Complete Overwrite when:

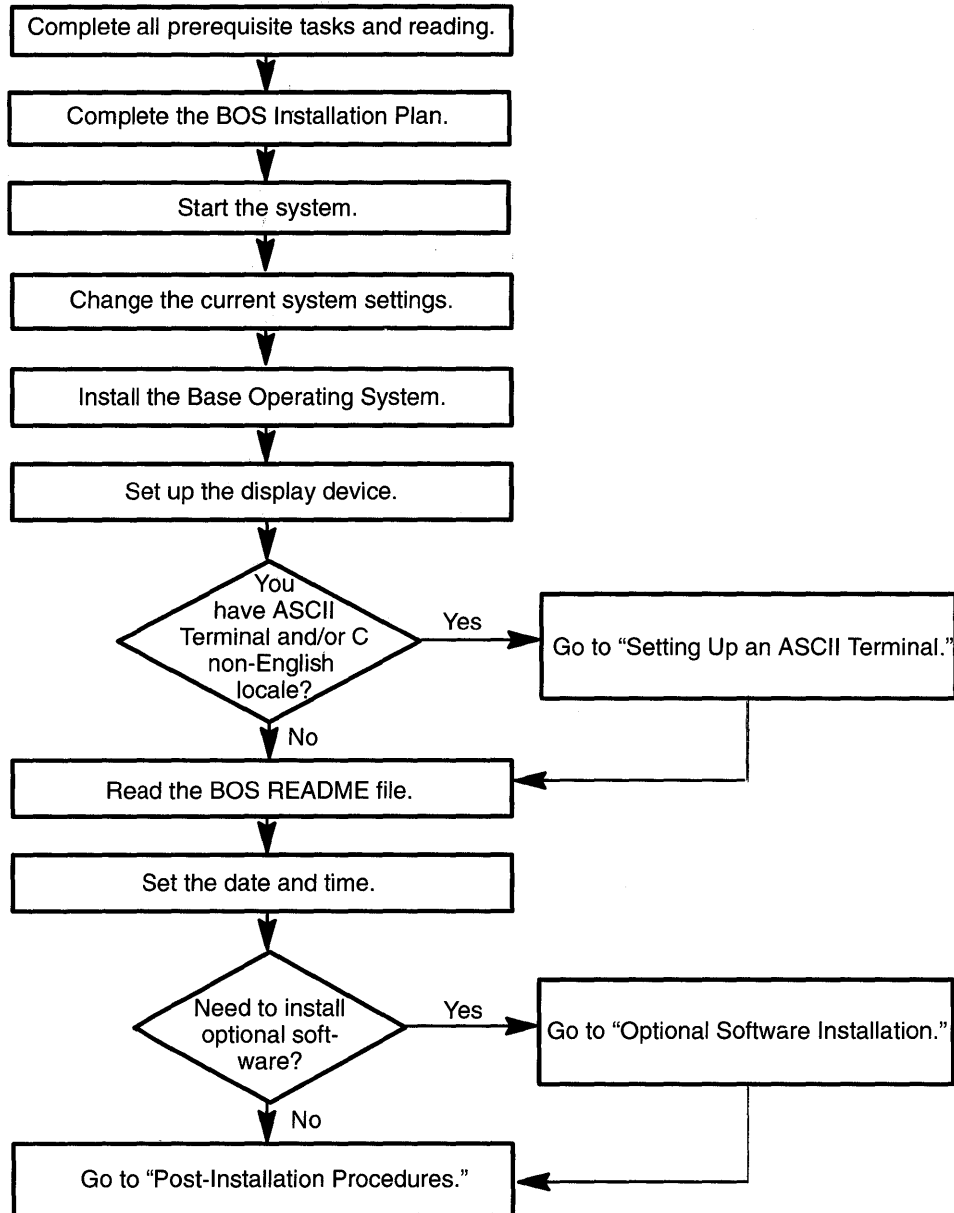
- You want to install onto hard disks that contain an existing root volume group, but you want to completely overwrite the root volume group.
For example, this might occur if your root volume group has become corrupted.
- You want to reassign your hard disks.
For example, you have four hard disks and they all belong to one root volume group. You want to separate the disks into two volume groups. First do a Complete Overwrite Installation and select the first two disks as the installation destination. These two disks become the root volume group. You then use SMIT to combine the remaining two disks into a second (nonroot) volume group. The result is two separate volume groups. All of the operating system files are in the root volume group and you can store user data in the second volume group. When the operating system is updated or reinstalled, the user's data is unaffected.



Warning: The Complete Overwrite procedure overwrites the selected destination disks. This means that after the installation is complete, you will have to manually configure your system using 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 Preservation Install procedure described in this chapter.

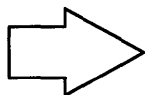
Flow Chart for BOS Installation from CD-ROM, Tape, or Diskette

This flow chart outlines the basic steps you must perform in order to install BOS Version 3.2 from CD-ROM, tape, or diskette.

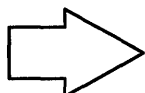
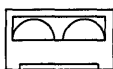


Prerequisite Tasks or Conditions

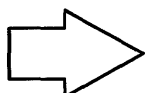
1. All hardware is installed, including any devices such as external CD-ROM or tape drives.
2. You should be familiar with the procedures for operating your hardware. If you are not familiar with your hardware, read “Chapter 18. Hardware Basics.”
3. You need to understand how to use the System Management Interface Tool (SMIT). If you are not familiar with SMIT, you should read “Chapter 19. SMIT Basics” and then return here and continue.
4. Locate the key for the key lock on your system unit.
5. Locate your installation media.



Do the following only if you are installing from CD-ROM:
Find the CD-ROM labelled Version 3.2.



Do the following only if you are installing from tapes:
Find the tape(s) labelled Version 3.2.



Do the following only if you are installing from diskettes:
Find the following diskettes:

BOS Boot, Display, Install/Maintenance, and, if appropriate,
BOS Display Extensions diskettes.

A series of diskettes beginning with BOS 1, a diskette labelled *bsmLanguage*, and a diskette labelled *bslLanguage*, where *Language* is your preferred language.

If you are using a non-IBM display adapter card, be sure that you have the display diskette from that manufacturer.

Note: If you are not sure whether or not you have a display adapter installed, consult the “About Your Machine” document that was shipped with your system. It contains a list of the factory hardware shipped with your system.

6. If you are doing a New Installation, skip to the next section “Procedural Overview.”

When you are doing a Preservation Installation or a Complete Overwrite Installation, it is recommended that you locate or create a backup of your system before you begin the installation.

If your system has Version 3.1.x installed and you performed a backup with the Upgrade Utilities, you do not need to do another backup. Skip to the next section, “Procedural Overview.”

If Version 3.1.x is installed and you did not use the Upgrade Utilities, refer to the installation guide that came with the installed version for instructions on creating a system backup. If you do not already have them, you should also create your BOSboot diskettes. When you are done, return here and continue.

If your system currently has BOS Version 3.2 installed, go to “Chapter 15. Backing Up Your System,” complete the procedures there, and then return here and continue.

Procedural Overview

This chapter contains instructions for the following sections:

- A . Complete the BOS Installation Plan
- B . Start the System
- C . New or Complete Overwrite: Change the Current System Settings
- D . Preservation: Change the Current System Settings
- E . Install the Version 3.2 Base Operating System (BOS)
- F . Set up the Display Device
- G . Setting Up an ASCII Terminal
- H . Read the BOS README File
- I . Set the Date and Time
- J . BOS Installation Completion Tasks.

Continue with the next section when you are ready to begin the installation.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin on the next page. This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of BOS and only need a minimal set of instructions, you can skip to page 2-38 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin in the next section below.

A. Complete the BOS Installation Plan

Go to “Chapter 16. Planning” and complete the BOS Installation Plan. Then, return here and continue with the next section, “B. Start the System.”

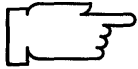
B. Start the System

1. If your system is turned OFF, go to step 2. If your system is ON, use the following procedures to shutdown the system.

- a. If you are not already logged in as `root`, log in as `root` now.
- b. Type the following:

```
shutdown
```

and press Enter.



Note: The shutdown process is complete when the system displays the message `Halt completed ...` on your display screen.

- c. When the shutdown process is complete, turn off your system unit.

2. Turn the system key to the SECURE position. Do not turn on the system unit.

Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order, so the system unit can properly identify the attached devices during the startup (boot) process.

3. Turn on all attached external devices, such as terminals, CD-ROM drives, tape drives, monitors, and external disk drives.



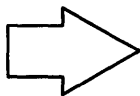
Note: If you are using an ASCII terminal, make sure that the terminal's line speed (baud rate) = 9600, word length (bits per character) = 8, parity = no (none), and number of stop bits = 1.

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 the attributes. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set the attributes.

4. Turn the system unit power switch to the ON position.
5. After several minutes, the `200` code will appear on the three-digit LED display on the system unit.

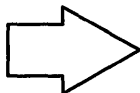
Note: On some systems, you may have to flip open a plastic door to see the three-digit LED display.

6. Do one of the following:



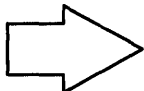
Insert the Version 3.2 CD-ROM into a disc caddy and insert the caddy into your CD-ROM drive.

Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it.



Insert the Version 3.2 tape into your tape drive.

Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.



Insert the Version 3.2 Boot diskette into the diskette drive.

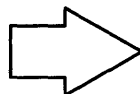
Note: Make sure that the BOS Boot diskette has the same version number as your BOS diskettes.

7. Turn the system key to the SERVICE position.

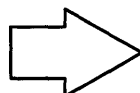
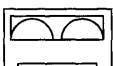
8. Press the yellow system Reset button twice in quick succession.

Note: On some systems, a Main Menu or “Select Language” screen may appear. If the Main Menu appears, follow the on-screen instructions to select the `Exit Main Menu & Start System (boot)` option. If the “Select Language” screen appears, follow the on-screen instructions to return to the Main Menu and select the `Exit Main Menu & Start System (boot)` option.

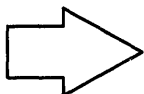
9. Your system will begin booting (starting). A series of codes will immediately appear on the system unit three-digit LED display.



If you are installing from CD-ROM, go to step 12.



If you are installing from tape, go to step 12.



If your system has one of the following display adapters installed, go to step 10. Otherwise, go to step 11.

Note: If you ordered a adapter with your system, the adapter name will be listed on your “About Your Machine” document as one of the following:

- POWER Gt3 Midrange graphics adapter
- POWER Gt4 Midrange graphics adapter
- POWER Gt4x Midrange graphics adapter
- High Speed 3D Graphics Accelerator
- Any other graphics adapter

If your system does *not* have one of the above adapters installed, go to step 11.

10. When c07 appears on the three-digit LED display, continue with step a.

- a. Remove the diskette from the diskette drive and insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step b.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

- b. When c07 appears the second time, remove the diskette from the drive and insert the BOS Display diskette.

Continue with step 12.

11. When the c07 code appears on your three-digit LED system display, remove the diskette from the drive and insert the BOS Display diskette.

Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step 12.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

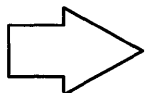
12. The screen may stay blank for several minutes. Then, c31 will appear on the three-digit LED display. Each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.



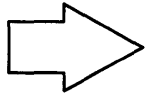
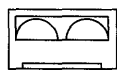
Note: During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right Shift key.

Console refers to the keyboard and display device. The system is asking which console you want to use as the system console. The system console is the one you will use for your system administration tasks.

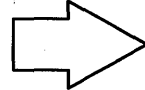
Press the specified keys only on the console that you want to use as your system console.



Go to step 14.



Go to step 14.



Go to step 13.

13. A message similar to the following is displayed:

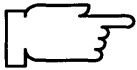
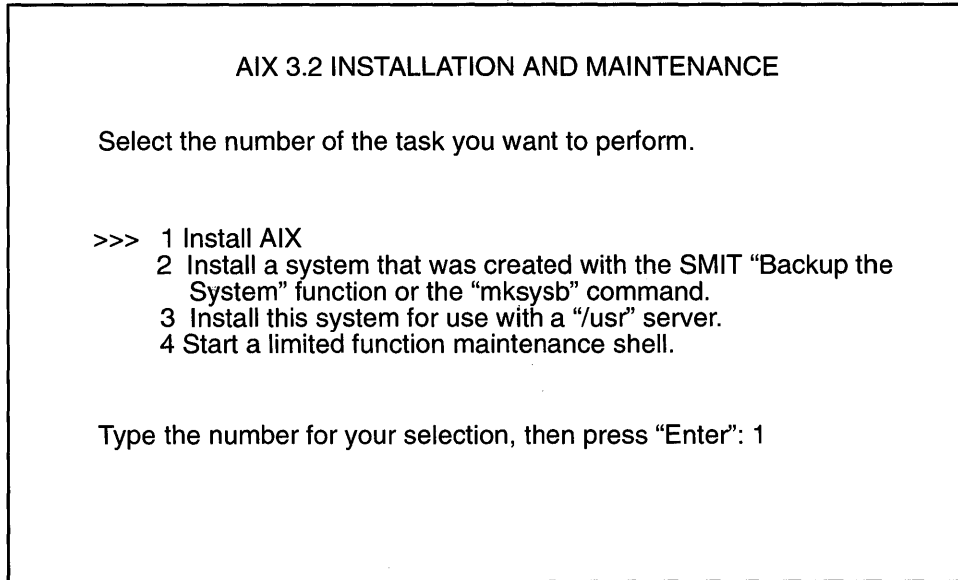
Insert BOS Install/Maint Diskette and Press Enter.

When you see this message, remove the Display diskette, insert the BOS Install/Maintenance diskette, and press Enter.

14. A series of messages is displayed. This may take several minutes.

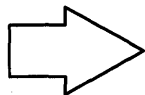
Note: If you are booting from tape, it is normal for the system to move the tape back and forth during this period.

A screen similar to the following is displayed:

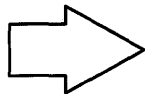
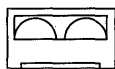


Note: The >>> (arrows) on this menu indicate the default selection.

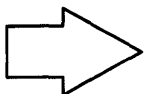
During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right shift key.



Continue with step 15.



Continue with step 15.



Remove the BOS Install/Maintenance diskette from the diskette drive. Then continue with step 15.

15. Press Enter to select **Install AIX**.

16. If you are doing a New installation, go to section "C. New or Complete Overwrite: Change the Current System Settings" on page 2-11.

If you are doing a Preservation or Complete Overwrite Installation, a screen similar to the following is displayed:

```
METHOD OF INSTALL

Select the number of the type of installation you want to perform

>>> 1 PRESERVATION INSTALL
      Preserves SOME of the data on the destination hard disk.
      Only overwrites the usr (/usr), temporary (/tmp), and root (/)
      file systems of the previously installed version of the AIX.

      2 COMPLETE OVERWRITE INSTALL
      May overwrite EVERYTHING on the destination hard disk.
      - If the destination disk is totally empty, select 2.
      - If AIX is already installed on the destination hard disk
      but there is nothing on the disk that you want to
      preserve, select 2.

      99 Return to previous menu

Type the number for your selection, then press Enter : 1
```

17. Select the method of install that you want to use by typing the appropriate number and then press Enter. The Current System Settings screen will then appear.

If you are doing a Preservation Install go to section "D. Preservation: Change the Current System Settings" on page 2-16.

If you are doing a Complete Overwrite Install, go to section "C. New or Complete Overwrite: Change the Current System Settings" on page 2-11.

C. New or Complete Overwrite: Change the Current System Settings



Note: Do *not* select **0** on the following Current Systems Settings screen until after you have read all of the instructions in section C.

A screen similar to the following is displayed:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter.

	CURRENT CHOICE
1 LOCALE (language)	C (POSIX)
2 INPUT Installation Device	150 mb Tape: /dev/rmt0
3 DESTINATION Disks	00-01-00-00
4 STARTUP (Boot) Device	00-01-00-00
99 Return to previous menu	
0 Install the AIX base operating system with the current settings	

Type the number for your selection, then press Enter : 0



Warning: When updating from Version 3.1.x to 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure. If you do not need to change the locale, go to the next section entitled "Input Installation Device" on page 2-13.

PROCEDURE

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following is displayed:

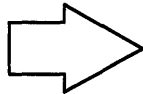
CHANGE LOCALE

Select the number for the language/locale.

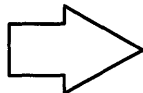
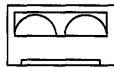
>>>	1	C (POSIX)	16	Italian
	2	Danish	17	Japanese
	3	Dutch (Belgium)	18	Norwegian
	4	Dutch	19	Portuguese
	5	English (Great Britain)	20	Spanish
	6	English (United States)	21	Swedish
	7	Finnish	22	Turkish
	8	French (Belgium)		
	9	French (Canada)		
	10	French (France)		
	11	French (Switzerland)		
	12	German (Switzerland)		
	13	German		
	14	Greek		
	15	Icelandic		
	99	Return to previous menu		

Type the number for your selection then press ENTER: 1

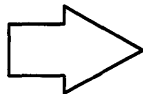
2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.



If the language you select as the locale is on the CD-ROM, it will be automatically installed during BOS installation.



If you specified your primary language when you ordered your BOS Version 3.2 software, it was loaded on your tape at the factory. If the language you selected for locale is on your tape, it will be automatically installed during BOS installation.



If you are installing from diskette, you will be prompted to insert the language and messages diskettes at the end of BOS installation. The system will then automatically install the locale you specify on the Current Settings screen.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Note: Changes to LOCALE (language) 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 is the same code set that you were using in Version 3.1.x. After software installation is completed, users that want to change their language environment or code set should consult the InfoExplorer articles "Understanding Locale," "How to Change Your Locale," and "Understanding Code Set Strategy."

During Optional Software installation, make sure and select for installation any additional locales (languages) that you want to install.

Go to the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.



Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device continue with the following procedure. If you do not need to change the input installation device, go to the next section called "Destination Disk."

PROCEDURE

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following is displayed:

```

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will
be the source of the software you are going to install.

    DEVICE TYPE          PATHNAME      LOCATION CODE
  1 Diskette:           /dev/fd0      00-00-0D-00
  2 8mm Tape:           /dev/rmt0     00-08-00-30
>>> 3 CDROM:             /dev/cd0      00-08-00-40
  4 Token-Ring:         /dev/tr0      00-00
  5 Token-Ring:         /dev/tr1      00-01
  6 Standard Ethernet:  /dev/en0      00-02
  7 IEEE 802.3 Ethernet /dev/et0      00-02:
  8 Standard Ethernet  /dev/en1      00-03:
  9 IEEE 802.3 Ethernet /dev/et1      00-03:

    99 Return to previous menu

Type the number for your selection then press ENTER: 3

```

2. Type the number for the device supplying the software you want to install and press Enter.
3. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Go to the next section, "Destination Disk."

Destination Disk

This section describes how to change the hard disk or disks where the Base Operating System (BOS) will be installed. The location codes of the hard disks are displayed on the CHANGE DESTINATION HARD DISK(S) screen in the LOCATION column. 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 under Vital Product Data and Location Codes in *POWERstation and POWERserver Diagnostic Programs Operator Guide*.



Warning: It is extremely important that you install to the correct destination since all of the existing data on the destination disk will be destroyed.

If you need to change the destination disk or disks, continue with the following procedure. If you do not need to change the destination disk, go to the next section called "Startup (Boot) Device."

PROCEDURE

1. To select **DESTINATION Disks** at the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following is displayed:

CHANGE DESTINATION HARD DISK(S)

Select the Destination Hard Disks. At least one bootable disk must be selected. If necessary, more than one hard disk may be selected. To cancel a selection, enter the number a second time. Current selection is indicated by >>>.

	LOCATION	SIZE (MB)	VOLUME GROUP ID	BOOTABLE DISK
>>> 1	00-07-00-00	320	00014099342d572c	Yes
>>> 2	00-07-00-10	320	00014099342d572c	No

99 Return to previous menu
0 Commit current selection and return to Settings Menu

Type the number for your selection, then press Enter: 0

2. Type the number for the hard disk(s) to which you want to install your software and press Enter. You can select multiple disks.
3. When you have finished selecting disks, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Startup (Boot) Disk."

Startup (Boot) Disk

This section describes how to select the hard disk within the group of destination disks that will contain the startup (boot) image. This is the hard disk that will be used to start your system after BOS is successfully installed and you reboot the system.

PROCEDURE

1. To select **STARTUP (Boot) Disk** at the Current System Settings menu, type the following:

4

and press Enter.

A screen similar to the following is displayed:

CHANGE STARTUP DISK

Choose the ID# of the startup (boot) disk.

STARTUP DISK
>>> 1 00-01-00-00

99 Return to previous menu

Type the number for your selection, then press ENTER: 0

2. Type the number for the disk on which you want your startup (boot) image to reside, and press Enter.
3. When you have finished, type the following:
0
and press Enter.
The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.
4. Go to section "E. Install the Version 3.2 Base Operating System" on page 2-20.

D. Preservation: Change the Current System Settings



Note: Do *not* select **0** on the Current Systems Settings screen until after you have read all of the instructions in section D.

A screen similar to the following is displayed:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter

	CURRENT CHOICE
1 LOCALE (language)	C (POSIX)
2 INPUT Installation Device	150mb Tape: /dev/rmt0
3 DESTINATION root VG	00-01-00-00
99 Return to previous menu	
0 Install the AIX base operating system with the current settings	

Type the number for your selection, then press Enter : 0



Warning: When updating from Version 3.1.x to 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Continue with the next section called "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure. If you do not need to change the locale, go to the next section entitled "Input Installation Device" on page 2-18.

PROCEDURE

1. To select **LOCALE** from the Current System Settings menu, type the following:

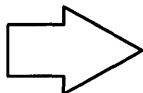
1

and press Enter.

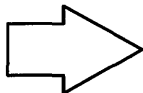
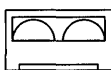
A screen similar to the following is displayed:

CHANGE LOCALE																																	
Select the number for the language/locale.																																	
>>>	<table> <tr> <td>1 C (POSIX)</td> <td>16 Italian</td> </tr> <tr> <td>2 Danish</td> <td>17 Japanese</td> </tr> <tr> <td>3 Dutch (Belgium)</td> <td>18 Norwegian</td> </tr> <tr> <td>4 Dutch</td> <td>19 Portuguese</td> </tr> <tr> <td>5 English (Great Britain)</td> <td>20 Spanish</td> </tr> <tr> <td>6 English (United States)</td> <td>21 Swedish</td> </tr> <tr> <td>7 Finnish</td> <td>22 Turkish</td> </tr> <tr> <td>8 French (Belgium)</td> <td></td> </tr> <tr> <td>9 French (Canada)</td> <td></td> </tr> <tr> <td>10 French (France)</td> <td></td> </tr> <tr> <td>11 French (Switzerland)</td> <td></td> </tr> <tr> <td>12 German (Switzerland)</td> <td></td> </tr> <tr> <td>13 German</td> <td></td> </tr> <tr> <td>14 Greek</td> <td></td> </tr> <tr> <td>15 Icelandic</td> <td></td> </tr> <tr> <td>99 Return to previous menu</td> <td></td> </tr> </table>	1 C (POSIX)	16 Italian	2 Danish	17 Japanese	3 Dutch (Belgium)	18 Norwegian	4 Dutch	19 Portuguese	5 English (Great Britain)	20 Spanish	6 English (United States)	21 Swedish	7 Finnish	22 Turkish	8 French (Belgium)		9 French (Canada)		10 French (France)		11 French (Switzerland)		12 German (Switzerland)		13 German		14 Greek		15 Icelandic		99 Return to previous menu	
1 C (POSIX)	16 Italian																																
2 Danish	17 Japanese																																
3 Dutch (Belgium)	18 Norwegian																																
4 Dutch	19 Portuguese																																
5 English (Great Britain)	20 Spanish																																
6 English (United States)	21 Swedish																																
7 Finnish	22 Turkish																																
8 French (Belgium)																																	
9 French (Canada)																																	
10 French (France)																																	
11 French (Switzerland)																																	
12 German (Switzerland)																																	
13 German																																	
14 Greek																																	
15 Icelandic																																	
99 Return to previous menu																																	
Type the number for your selection then press ENTER: 1																																	

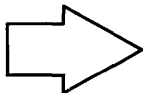
2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.



If the language you select as the locale is on the CD-ROM, it will be automatically installed during BOS installation.



If you specified your primary language when you ordered your BOS Version 3.2 software, it was loaded on your tape at the factory. If the language you selected for locale is on your tape, it will be automatically installed during BOS installation.



If you are installing from diskette, you will be prompted to insert the language and messages diskettes at the end of BOS installation. The system will then automatically install the locale you specify on the current settings screen.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Note: Changes to LOCALE (language) 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 is the same code set that you were using in Version 3.1.x. After software installation is completed, users that want to change their language environment or code set should consult the InfoExplorer articles "Understanding Locale," "How to Change Your Locale," and "Understanding Code Set Strategy."

During Optional Software installation, make sure and select for installation any additional locales (languages) that you want to install.

Go to the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.



Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device, continue with the following procedure. If you do not need to change the input installation device, go to the next section called "Destination Root Volume Group."

PROCEDURE

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following is displayed:

```
CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will
be the source of the software you are going to install.

      DEVICE TYPE          PATHNAME      LOCATION CODE
1  Diskette:              /dev/fd0     00-00-0D-00
2  8mm Tape:             /dev/rmt0    00-08-00-30
>>> 3  CDROM:              /dev/cd0     00-08-00-40
4  Token-Ring:           /dev/tr0     00-00
5  Token-Ring:           /dev/tr1     00-01
6  Standard Ethernet:    /dev/en0     00-02
7  IEEE 802.3 Ethernet   /dev/et0     00-02:
8  Standard Ethernet     /dev/en1     00-03:
9  IEEE 802.3 Ethernet   /dev/et1     00-03:

99 Return to previous menu

Type the number for your selection then press ENTER: 3
```

2. Type the number for the device supplying the software you want to install and press Enter.
3. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Go to the next section, "Destination Root Volume Group."

Destination Root Volume Group

This setting specifies the hard disk or disks where you want BOS to be installed. A volume group is a single hard disk or a group of hard disks. A root volume group is a group of hard disks that contains boot files so that it can be used to start (boot) the system. It is possible to have more than one root volume group on your system. This procedure describes how to select the root volume group that will be the destination for the new version of BOS that you are installing.



Warning: It is extremely important that you select the correct root volume group since some of the existing data in the destination root volume group will be destroyed during BOS install.

- To select **DESTINATION root VG** from the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following is displayed:

```

CHANGE DESTINATION ROOT VOLUME GROUP

Select the number of the Destination Root Volume Group (RVG).

                                |< -----hard disks in group----->|

ROOT VOLUME GROUP  LOCATION  SIZE      LOCATION SIZE  LOCATION SIZE
>>>  00000008815808900-01-00-00 320
2.   00000007712201300-01-00-10 320

99 Return to previous menu

Type the number(s) for your selection, then press ENTER: 1
    
```

- Consult your BOS Installation Worksheet for the identification number of your destination root volume group. Type the menu number for the destination root volume group and press Enter. For example, to select **ROOT VOLUME GROUP 00000088158089**, as shown in the preceding example screen, you would type **1** and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Go to the next section, "E. Install the Base Operating System."

E. Install the Version 3.2 Base Operating System

When you have finished setting all of the values on the Current System Settings menu, you can instruct the system to begin installing the Base Operating System (BOS).

1. To select **Install the AIX Base Operating System with the current settings** at the Current System Settings menu, type the following:

0

and press Enter.



Note: The appearance of the next screen will vary according to the type of install you are doing. However, you should use the following procedures for all versions of this screen.

For example, if you are doing a Preservation Installation, a screen similar to the following is displayed:

```
FINAL WARNING

Select the number of the desired action

Base Operating System installation will destroy or impair
recovery of all data in the usr (/usr), temporary (/tmp), and
root file systems of the selected root volume group.

99 Return to Previous Menu
>>> 0 Continue with Install

Type the number for your selection, then press ENTER
```

2. To begin installing the system, type the following:

0

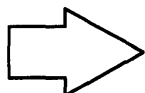
and press Enter. Note: the screen will not immediately change after you press Enter.

If within a few seconds you see a `Device is not ready` message, go to step 3.

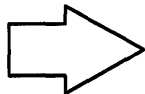
If this message does *not* occur, go to step 4.

3. You probably selected the wrong input device. If this error occurs, you *must* return to step 6 in section "B. Start the System" on page 2-6 and repeat the install procedure.

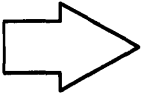
4. Do one of the following:



Go to step 6.



Go to step 6.



Go to step 5.

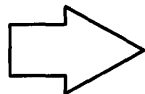
5. A message similar to the following will appear:

```
Please insert the first BOS diskette
and press Enter to continue ...
```

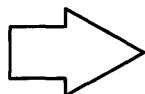
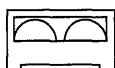
Remove the BOS Install/Maintenance diskette and insert the first BOS diskette and press Enter. Continue with step 6.

6. As the system begins installing BOS (which will take a while), system messages will be displayed as the following activities occur:

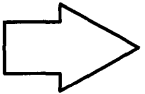
- File systems are created.
- Files are restored.



Note: When the screen shown below appears continue with step 7.



Note: When the screen shown below appears continue with step 7.



Note: As the installation process continues, a message similar to the following may be displayed when it is time to insert another diskette:

```
pax: Ready for volume 2.
pax: Type "go" when ready to proceed (or
"quit" to abort):
```

a. Insert the next diskette, type the following:

```
go
```

and press Enter.

Continue inserting diskettes when prompted.

b. When the following screen appears (this will take a while), go to step 7.

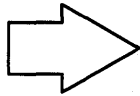
AIX Base Operating System installation is complete.

Please perform the following three steps to activate the changes made during this installation.

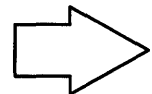
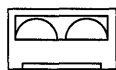
1. Make sure your installation media (tape, diskette, CD1-ROM, etc.) has been removed from the input device.
2. Turn the system key to the NORMAL position
3. Press the ENTER key to restart (reboot) the system.

Note: There are two error messages that may be displayed during BOS installation that you can ignore. The messages state that no software products were found and that no valid products were left to process. These messages are a normal part of the install process and are not indicative of any errors.

7. Remove the CD-ROM, tape, or diskette from the drive.



Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it.



Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

8. Turn the System key to the NORMAL position.
9. Press Enter to shutdown and reboot the system. System messages will appear as the system goes through the shutdown process. As the system reboots, the screen may go blank for a few minutes.

Note: If you are doing a Preservation Install, the system may do a shutdown and a second boot to complete all of your locale changes.

When the system completes the boot (startup) process, a login prompt is displayed on your console.

10. To log in to the system as root, type the following:

```
root
```

and press Enter.

A system prompt (#) appears.

Your Base Operating System is now installed.

Note: Although a message may appear on the screen instructing you to read the README files, it is not necessary to read those files at this time.

11. Go to the next section, "F. Set Up the Display Device."

F. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

1. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.

2. To see what display name is stored in TERM, type the following:

```
echo $TERM (note that TERM is in capital letters),
```

and press Enter.

The system responds with the name of the type of display the system thinks you are using.

3. Look at the possible responses to **echo TERM** command to see what you should do next:

If TERM = dumb

This means that the system was unable to automatically recognize your display. You must manually set the display name. Go to step 4.

If TERM = hft

And you are using an hft such as a model 5081, 6091, or 8508, then go to the section "H. Read the BOS README File" on page 2-29. If you are not using an hft, go to step 4.

If TERM = a model number

Such as *ibm3151* and the number is correct, go to "G. Setting Up an ASCII Terminal" on page 2-27. If the number is wrong, go to step 4.

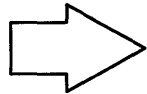
4. Search the list below and see if your terminal type is in the list.

hft	ibm5550	vt100	wyse60-316X
ibm3151	ibm5570	vt220	wyse60-316X
ibm3163		vt320	
ibm3164		vt330	

If your terminal type is listed above, write down the name precisely as it appears in the list then go to step 7.

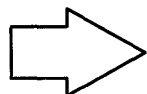
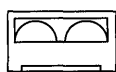
If your terminal type is not listed above, go to step 5.

5. Since your terminal was not in the list above, you need to install an additional terminal information file.
 - a. Insert the BOS Version 3.2 CD-ROM, tape, or diskette.
 - b. To determine the logical name of your drive, do the following:



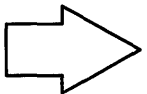
If you are installing from CD-ROM, type:

```
lsdev -Cc cdrom
```



If you are installing from tape, type:

```
lsdev -Cc tape
```



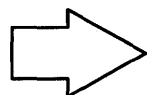
If you are installing from diskette, type:

```
lsdev -Cc diskette
```

and press Enter.

The available drives are then displayed. The first word in each line is the drive name.

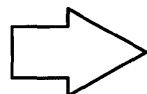
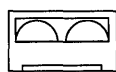
- c. Write down the name of the drive where you inserted the CD-ROM, tape, or diskette.
- d. To install the additional terminal information (contained in bos.data), do the following:



If you are installing from CD-ROM, type:

(where *name* is the device name you noted in step 5c.)

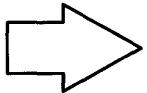
```
installp -qaX -d /dev/name bos.data
```



If you are installing from tape, type:

(where *name* is the device name you noted in step 5c and the ".1" after the device name specifies the no-rewind mode.)

```
installp -qaX -d /dev/name.1 bos.data
```



If you are installing from diskette, type:

(where *name* is the device name you noted in step 5c.)

```
installp -qaX -d /dev/name bos.data
```

and press Enter.

- e. After the installation is finished, an installp summary is displayed. If bos.data was installed correctly, the Event column will show APPLY and the Result column will show SUCCESS.

6. Display names must be typed in a specific format.

- a. To see the terminfo list of the valid display names, type the following:

```
ls /usr/share/lib/terminfo/x
```

(where *x* is the first letter (not capitalized) of the name of the manufacturer or type of your display.
For example, if you have an IBM display, you would type:
ls /usr/share/lib/terminfo/i
where *i* stands for IBM.)

and press Enter.

- b. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether or not the letters are capitalized. For example, for a model 3151 display, the list will show `ibm3151` as the correct display name.

7. Type the following:

```
export TERM=xxx
```

(where *xxx* is the exact display name that you copied from the terminfo list.
For example, if you are using a 3151, you would type:
export TERM=ibm3151 and then press Enter.)

and press Enter.

8. The TERM name should now be set correctly. However, the name will only be stored until you log off (`exit`) from this session. If you want to avoid having to repeat step 7 every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second `/` are the device name. In this example, it is `tty0` (where the last character in this example is a zero, not the letter "o").

- b. Type the following:

```
chdev -a term=xxx -l zzz
```

(where *xxx* is the display name you used in step 7 and *zzz* is the tty device name you found in step 8a.
Note: The `-l` in this command is a lowercase "L" and that `term` is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0` changed.

Your terminal should now be set correctly. Continue with the next section, "G. Setting Up an ASCII Terminal."

G. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments).

If you are using an hft such as a model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the section "H. Read the BOS README File" on page 2-29.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE

1. To see what locale (language) is stored in the LANG variable, type the following:
(note that LANG is in capital letters.)

```
echo $LANG
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

```
C                (POSIX)
en_GB   or   En_GB   (Great Britain)
en_JP   or   En_JP   (Japan)
en_US   or   En_US   (United States)
```

YES: The system displayed one of the above locales, go to the next section "H. Read the BOS README File" on page 2-29.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo LANG** command a *lower* case letter?

YES: It is a *lower* case letter, go to the next section, "H. Read the BOS README File" on page 2-29.

NO: It is an *upper* case letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the ".in" suffix. Make careful note on whether or not the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see what tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname the tty device. For example, it may display `/dev/tty0`. The characters after `/dev/tty` is the number identifying your tty device.

7. To set the input and output map files, type the following:

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

(where `-l` is a lower case "L",
`x` is the number identifying your tty from step 6,
and `mapfile` is the name you wrote down from the `termmap` listing in step 5.)

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section, "H. Read the BOS README File."

H. Read the BOS README File

A README file is an on-line document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software. It is important that you read the installation section of the BOS README file before you continue.

The following procedures contain instructions for viewing the BOS README. As you read the README, write any installation procedure corrections into this manual.

When you are done with the installation section of the README file, return to page 2-30 and continue with the next section of this manual called "I. Set the Date and Time."

PROCEDURE:

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:

```
/2.Installation
```

and press Enter.

Note: There are no blank spaces in this command.

4. The installation notes appear.

To show the next page Press Enter

To show the previous page Type -1 and press Enter.

Read the notes and write the specified corrections into this manual.

5. When you are finished with the "Installation" section, type the following at the colon (:) prompt:

```
q
```

and press Enter.

The system prompt (#) reappears.

6. Continue with the next section of this manual, "I. Set Date and Time."

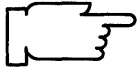
I. Set the Date and Time

1. At the system prompt (#), type the following:

date

and press Enter.

The system displays the date and time.



Note: Time on your system is expressed in terms of a 24-hour clock, often called “military time.” In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to step 11 on page 2-33.
- To change the date and time, go to step 2.

2. Type the following:

```
smit startup      (or smit -C startup if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

```

                                SYSTEM STARTUP MENU

                                Your AIX Base Operating System has been installed.
                                You can now perform any of the options below.

                                Move cursor to desired item and press Enter.

                                Backup the System
                                System Environments
                                Software Products
                                TCP/IP
                                NFS

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

3. Select **System Environments** and press Enter. A screen similar to the following is displayed:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
 Change Number of Virtual Terminals at Next System Restart
 Change / Show Date, Time, and Time Zone
 Change / Show Characteristics of Operating System
 Manage Language Environment
 Change Number of Licensed Users

4. Select **Change / Show Date, Time, and Time Zone** and press Enter. A screen similar to the following is displayed:

System Environments

Move cursor to desired item and press Enter.

Assign the Console
 Change / Show Date, Time, and Time Zone
 Change Language Environment
 Change Number of Licensed Users

Use DAYLIGHT SAVINGS TIME?

Move cursor to desired item and press Enter.

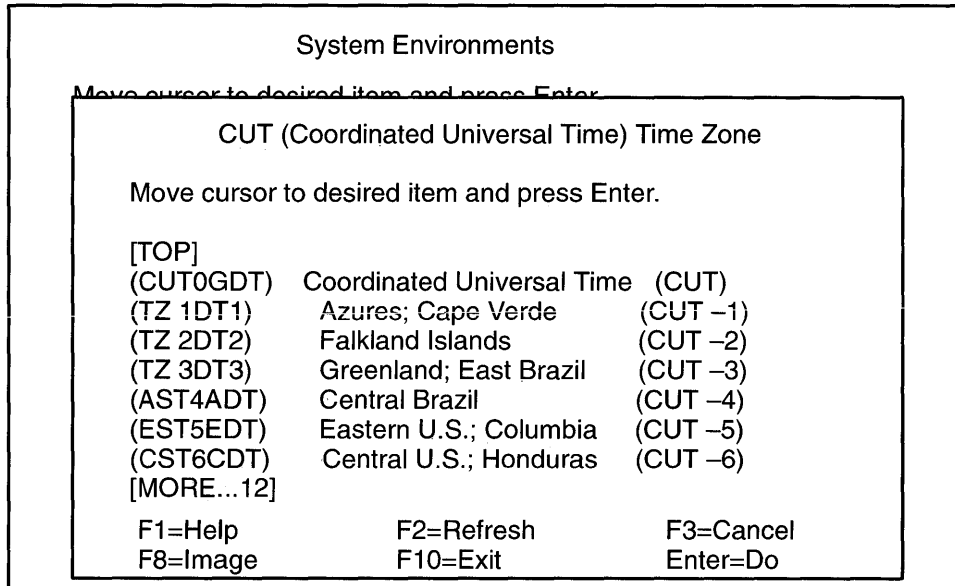
Does this time zone go on
 # DAYLIGHT SAVINGS TIME?
 #
 1 yes
 2 no

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

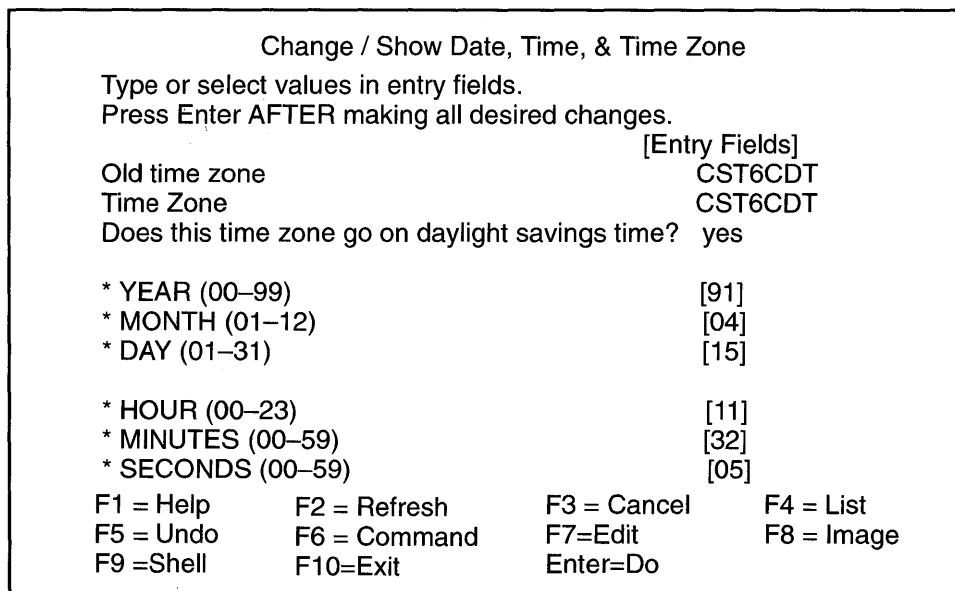
5. You have two choices:

- If your time zone uses daylight savings time, move the cursor to `yes` and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to `no` and press Enter.

A screen similar to the following is displayed:



6. Move the cursor to highlight your time zone and press Enter. Use the up and down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following is displayed:



7. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following is displayed:

```

                                COMMAND STATUS
Command: OK          stdout: yes          stderr: no

Before completion, additional instructions may appear below

Mon Apr 15 11:32:05 CST 1991

Now exit SMIT and log out and then back in so that any changes to date,
time, and time zone will be reflected in your current session.

F1=Help      F2=Refresh    F3=Cancel    F6=Command
F8=Image     F9=Shell      F10=Exit

```

8. Press F10 to exit SMIT.
- If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Go to step 9.
 - If you did *not* change the time zone, you have finished setting the date and time. Go to step 11.
9. Use the following procedure to log off the system:
- At the system prompt, type the following:
- ```
exit
```
- and press Enter.
- The login prompt is displayed. Continue with step 10.
10. To log back into the system, type the following:
- ```
root
```
- and press Enter.
- You have finished setting the date and time. Continue with step 11.
11. You have finished setting the date and time. Continue with the next section, "J. BOS Installation Completion Tasks."

J. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION	Go to procedure “Preservation Installation: Restoring the <code>/etc/filesystems</code> File.”
COMPLETE OVERWRITE	Go to procedure “Complete Overwrite Installation: Importing Any Nonroot Volume Groups” on page 2-35.
NEW	Go to “Where Do I Go Next?” on page 2-36.

Preservation Installation: Restoring the `/etc/filesystems` File

If you are using the “Upgrade Utilities” to restore your configuration, skip this procedure and go to “Restoring Your SNA Configuration” on page 2-36.

If you are *not* using the “Upgrade Utilities,” you need to perform the following procedure.

The preservation installation process saves your old `/etc/filesystems` file into a file called `/etc/filesystems.old`. This file contains information on your file system’s mount points and attributes. You must now copy this data back into the `/etc/filesystems` file and create the mount points for all the journaled file systems.

This procedure describes how to restore your `/etc/filesystems` file, create the directory mount points, and mount the directories.

PROCEDURE

1. Type the following:

```
cd /etc
```

and press Enter.

2. To create the mount points for all journaled file systems known to the system, type the following:

```
lsvg -o | xargs imfs
```

and press Enter.

3. To copy the old **filesystem** file, type the following:

```
cp filesystems.old filesystems
```

and press Enter.

4. To list the NFS file systems in the `/etc/filesystems` file, type the following:

```
lsfs -v nfs
```

and press Enter.

5. For *each* directory in the listing, type the following:

```
mkdir -p MountPoint (where MountPoint is the name of each directory in the Mount Pt column.)
```

and press Enter.

6. To list the CD-ROM file systems in the `/etc/filesystems` file, type the following:

```
lsfs -v cdrfs
```

and press Enter.

7. For *each* directory in the listing, type the following

```
mkdir -p MountPoint (where MountPoint is the name of each directory in the
Mount Pt column.)
```

and press Enter.

8. If you want to mount any journaled file systems now, use the **smit mountfs** command.

You have finished restoring your `/etc/filesystems` file. Go to “Where Do I Go Next?” on page 2-36.

Complete Overwrite Installation: Importing Any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to “Restoring Your SNA Configuration” on page 2-36.

If you have any nonroot volume groups, perform the following procedure.

This procedure is used to make any nonroot volume group hard drives known to your system. If this procedure is not done you will not be able to access your nonroot volume hard drives.

This procedure describes how to import a nonroot volume group and mount the file systems.

PROCEDURE

1. Type the following:

```
smit importvg (or smit -C importvg if you are working in AIXwindows)
```

and press Enter.

2. `VOLUME GROUP name` is highlighted.

Type the name you want to call this volume group.

3. Move the cursor to `PHYSICAL VOLUME name`.

Press F4 to list the available physical volumes.

A list a physical volumes should be displayed.

4. Move the cursor to select the physical volume you want to import.

Press Enter.

5. Press Enter again to begin command execution.

6. A Command Status screen appears. When the `Command: status` indicator changes to OK, press F10 to exit SMIT.

7. If you want to mount any journaled file systems now, use the **smit mountfs** command.

You have finished importing your volume group(s). Go to the next procedure “Restoring Your SNA Configuration” on page 2-36.

Restoring Your SNA Configuration

If you are *not* using the “Upgrade Utilities” to upgrade from Version 3.1.x to Version 3.2, go to the next section, “Where Do I Go Next?”

If SNA was *not* already installed on your system when you began to install BOS, go to the next section, “Where Do I Go Next?”

If you are *not* going to install SNA, go to the next section, “Where Do I Go Next?”

This procedure will restore the SNA configuration information that you saved using the “Upgrade Utilities.”

PROCEDURE

1. Type the following:

```
cd /
```

and press Enter.

2. Insert the backup image labelled “Configuration File for rsconf” into your tape or diskette drive.

3. To restore the SNA migration file, type the following:

```
restore -xqvf /dev/name ./tmp/.SNA_migration
```

 (where *name* is the name of your tape or diskette drive.)

and press Enter.

You have finished restoring your SNA configuration. Continue to the next section, “Where Do I Go Next?”

Where Do I Go Next?

If you need to install optional software go to “Chapter 6. Optional Software Installation.” If you do not need to install optional software, go to “Chapter 8. Post-Installation Procedures.”

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **pax** command, **sysck** command, **tar** command, and the **ls** command.

The Backup Overview in *General Concepts and Procedures* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *General Concepts and Procedures* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The file systems Overview in *General Concepts and Procedures* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *General Concepts and Procedures* provides information on mounting files and directories, mount points, and automatic mounts.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000*.

Using SMIT in *Getting Started: Managing the IBM RISC System/6000*.

IBM RISC System/6000 Problem Solving Guide.

ADVANCED PATH: BOS Installation from CD-ROM, Tape, or Diskette

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning" and complete the BOS Installation Plan.

B. Start the System

1. Make sure your system is OFF.
2. Turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, tape drives, monitors, and external disk drives.
4. Turn the system unit power switch to the ON position.
5. After several minutes, the 200 code will appear on the three-digit LED display.
6. Insert the BOS CD-ROM, first BOS tape, or BOS boot diskette.
7. Turn the system key to the SERVICE position.
8. Press the yellow system Reset button twice in quick succession.
9. If you are installing from CD-ROM or tape, go to step 12.
10. When c07 appears on the three-digit LED display, insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
11. When c07 appears the second time, insert the BOS Display diskette.
12. When c31 appears on the three-digit LED display, select the device that you want to use as your console.
13. If you are installing from diskettes, insert the BOS Installation/Maintenance diskette.
14. At the 3.2 INSTALLATION AND MAINTENANCE screen, select item 1.
15. What type of installation are you performing?

PRESERVATION	At the METHODS OF INSTALL screen, enter 1. Then go to section "D. Preservation: Change the Current System Settings."
COMPLETE OVERWRITE	At the METHODS OF INSTALL screen, enter 2. Then go to section "C. New or Complete Overwrite: Change the Current System Settings."
NEW	Go to section "C. New or Complete Overwrite: Change the Current System Settings."

C. New or Complete Overwrite: Change the Current System Settings

1. To change the LOCALE (Language), enter `1` and choose the locale (language).
2. To change the INPUT Installation Device, enter `2` and choose the correct installation device.
3. To change the DESTINATION Disks, enter `3` and choose your destination disks.
4. To change the STARTUP (Boot) Disk, enter `4` and choose your startup disk.

D. Preservation: Change the Current System Settings

1. To change the LOCALE (Language), enter `1` and choose the correct locale (language).
2. To change the INPUT Installation Device, enter `2` and choose the correct installation device.
3. To change the DESTINATION root VG, enter `3` and choose the correct destination Root VG.

E. Start the Installation Process

1. From the Current System Settings screen, enter `0` to begin the installation.
2. From the FINAL WARNING screen, enter `0` to start the installation.
3. What is your installation media?

CD-ROM	Insert the CD-ROM if prompted.
TAPE	Insert each tape if prompted.
DISKETTES	Insert the first SMIT mksysb backup diskette. Insert each diskette when prompted.
4. When the reboot screen appears, do the following:
 - a. Remove the CD-ROM, tape, diskette from the drive.
 - b. Turn the System key to the NORMAL position.
 - c. Press Enter to reboot the system.
5. After the system reboots, log in to the system as root.

F. Set Up the Display Device

1. If you are using an HFT, skip to section "H. Read the BOS README File."
2. Enter `export TERM=xxx` where `xxx` is your display name.
3. Enter `chdev -a term=xxx -l zzz` where `xxx` is your display name and `zzz` is the tty device you are using.

G. Setting Up an ASCII Terminal

If you are using a non-English Locale (Language), do the following:

1. Enter `ls /etc/nls/termmap` to list the available input and output map files.
2. Enter `setmaps -t mapfile` where `mapfile` is from the termmap listing.
3. Enter `chdev -l ttyzzz -a imap=mapfile -a omap=mapfile` where `zzz` is the tty device you are using and `mapfile` is from the termmap listing.

H. Read the BOS README File

To read the installation chapter of the BOS README file, type `pg /usr/lpp/bos/README` and press Enter.

I. Set the Date and Time

1. Enter `date` to check the system date.
2. If the date is not correct, execute the `smit chtz` command to change the date.

J. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION	Go to procedure “Preservation Installation: Restoring the /etc/filesystems File.”
COMPLETE OVERWRITE	Go to procedure “Complete Overwrite Installation: Importing any NonRoot Volume Groups.”
NEW	Go to section “Where Do I Go Next?”

Preservation Installation: Restoring the /etc/filesystems File

If you are using the “Upgrade Utilities” to restore your configuration, skip this procedure and go to “Restoring Your SNA Configuration.” If you are not using the Upgrade Utilities, continue with step 1.

1. Enter `lsvg -o | xargs imfs` to create the mount points for all journaled file systems known to the system.
2. Enter `cp /etc/filesystems.old /etc/filesystems` at the system prompt.
3. Enter `lsfs -v nfs` to list the NFS file systems in the `/etc/filesystems` file.
4. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
5. Enter `lsfs -v cdrfs` to list the CD-ROM file systems in the `/etc/filesystems` file.
6. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
7. Execute `smit mountfs` to mount any journaled file systems.
8. Go to section “Where Do I Go Next?”

Complete Overwrite Installation: Importing any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to “Restoring Your SNA Configuration.”

1. Execute the `smit importvg` command to import and varyon any nonroot volume groups.
2. Execute the `smit mountfs` command to mount any journaled file systems.
3. Go to the next section, “Restoring Your SNA Configuration.”

Restoring Your SNA Configuration

If you are *not* using the “Upgrade Utilities,” go to the next section “Where Do I Go Next?”

If SNA was *not* already installed on your system when you began to install BOS, go to the next section, “Where Do I Go Next.”

If you are *not* going to install SNA, go to the next section “Where Do I Go Next.”

The following procedure will restore your SNA configuration so that you do not have to manually reconfigure SNA. Continue with step 1.

1. Enter `cd /` at the system prompt.
2. Insert the backup image labelled “Configuration File for rsconf” into your tape or diskette drive.
3. Enter `restore -xqvf /dev/name ./tmp/.SNA_migration`
(where *name* is the name of your tape or diskette drive.)

Where Do I Go Next?

1. If you are installing optional software, go to “Chapter 6. Installing Optional Software Products.”
2. If you do not need to install optional software, go to “Chapter 8. Post-Installation Procedures.”

NOTES

Chapter 3. Installation from a System Backup

This chapter describes how to install a system from a backup copy (image) of the root volume group on a previously installed system. A *root volume group* is a disk, or group of disks, that contain the boot (startup) files, the Base Operating System (BOS), system configuration data, and any optional software products that were installed.

This procedure to install from a system backup can be used for two reasons:

1. To restore a corrupted system using the system's own backup image, or
2. To install and configure software on one system and then duplicate that installation on other systems. This technique is called cloning.



Note: To use the procedure described in this chapter, the backup copy must have been created using the Version 3.2. Within the Version 3.2, there are several different ways to create backups. To use the procedures in this chapter, the backup must have been created by using the SMIT Backup the System menu, or from the command line using the **mkszfile** and **mksysb** (make system backup) commands. In this chapter, the term *backup* always means a backup created using these techniques. If you need to create a backup, use the procedures in “Chapter 15. Backing Up Your System.”

You can install using a backup image that is stored on tapes or diskettes. You can also install a backup image that is stored in a directory on your network installation server.

It is important to understand the terms *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.

There are two significant advantages to installing from a backup image. The first advantage is that in addition to installing BOS, all of the optional software that was installed on the source system will be automatically installed on the target system. This will eliminate, or at least reduce, the need to perform optional software installation tasks.

The second advantage is that user configuration information may be retained. This means that you may avoid some of the configuration tasks that normally must be done after a system is installed. The configuration information will be retained during installation if:

- The target system has the same hardware configuration as the source system,
- The target has at least as much disk space as the source system.

During the installation of the Base Operating System (BOS), 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 enough disk space on the target system, the entire backup is recovered. If there is not enough disk space, the installation will halt and the system will prompt you to choose more destination hard disks. When file systems are created on the target system they will be the same size as they were on the source (except for **/tmp**).

After the installation is complete, the Object Data Manager (ODM) on the target system is reconfigured. If the target system does not have exactly the same hardware configuration as the source system, the device attributes may be modified in the following target system files:

- All files in `/etc/objrepos` beginning with 'Cu'
- All files in the `/dev` directory.



Note: If you are using backup installation for cloning, there are two types of configuration data that you may not want copied to the target systems: passwords and network addresses. If passwords from the source are copied to the target systems this can create security problems. If network addresses are copied to a target system, duplicate addresses can disrupt network communications.

If you do not want this information to your target system, you have two choices:

- Use a backup image that was created before the source system was configured with this information, or
- Manually modify this information from the target system immediately after the backup image is installed.

The chapter explains two different methods for installing a backup image: New Installation, and Complete Overwrite Installation. The instructions are combined in one chapter because the procedures for the two types of installation are very similar. The differences in the procedures will be pointed out where they occur.

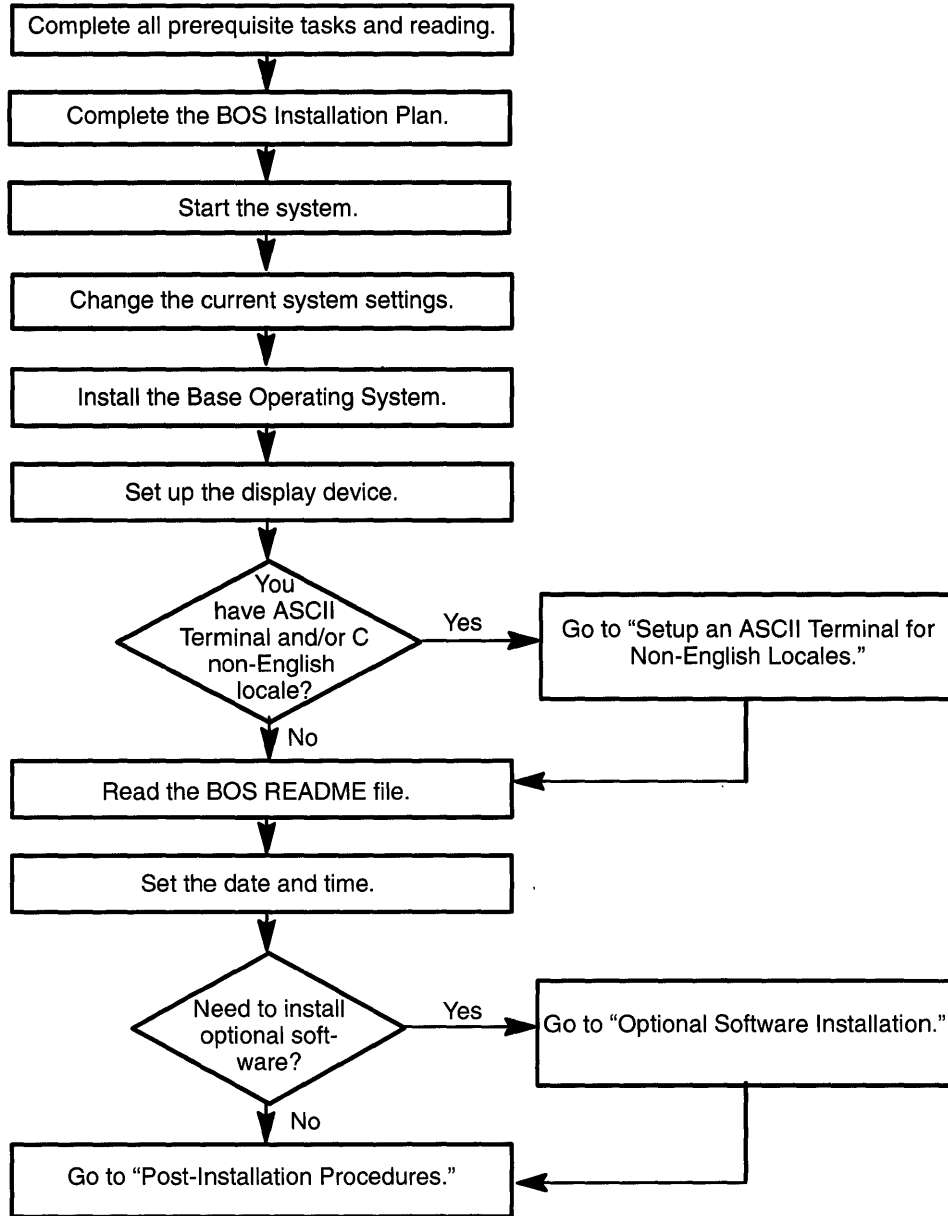
1. *New Installation* is performed when the hard disk or disks you are installing the backup onto are *empty*. A hard disk is empty if it does not contain any data or if it contains some data, but it does not contain a root volume group (it is not bootable).
2. *Complete Overwrite Installation* is used when a previous version of BOS is already installed on your system, and you want to completely overwrite the existing version of BOS. This procedure may impair recovery of data or destroy all existing data on your hard drives.

Use Complete Overwrite when

- You want to install onto disks that contain an existing root volume group, but you want to completely overwrite the root volume group.
(For example, this might occur if your root volume group has become corrupted.)
- You want to reassign your hard disks;
(For example, if you have four hard disks and they all belong to one root volume group, you want to separate the disks into two volume groups. You might first do a Complete Overwrite Installation and select the first two disks as the installation destination. These disks would become the root volume group. You could then use SMIT to combine the remaining two 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 if the operating system is updated or reinstalled, the user's data would be unaffected.)

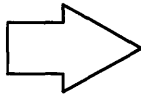
Flowchart for BOS Installation from Backup or mksysb

This flowchart outlines the basic steps you must perform to install the Version 3.2 Base Operating System from backup or mksysb.



Prerequisite Tasks or Conditions

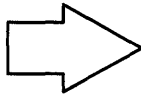
1. All hardware is installed, including any devices such as external tape drives.
2. You should be familiar with the procedures for operating your hardware. If you are not familiar with your hardware, read “Chapter 18. Hardware Basics.”
3. You need to understand how to use the System Management Interface Tool (SMIT). If you are not familiar with SMIT, you should read “Chapter 19. SMIT Basics” and then return here and continue.
4. Locate the key for the key lock on your system unit.
5. Locate media that contains your system backup.



Find the tapes that contain the backup that you want to install on this system.

Note: These tapes must have been created in one of two ways:

- Using the SMIT Backup the System menu.
- OR
- From the command line using the **mkszfile** and **mksysb** commands.



Find the diskettes that contain the backup that you want to install on this system.

Note: These diskettes must have been created in one of two ways:

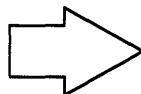
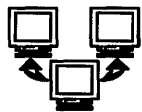
- Using the SMIT Backup the System menu.
- OR
- From the command line using the **mksysb** and **mkszfile** commands.

The primary diskettes:

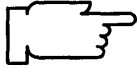
BOS Boot, Display, Install/Maintenance, and, if appropriate, BOS Display Extensions diskettes.

If you are using a display adapter card, be sure that you have the display diskette from that manufacturer.

Note: If you are not sure whether or not you have a display adapter installed, consult the “About Your Machine” document that was shipped with your system. It contains a list of the factory hardware shipped with your system.



Before you can install a backup image from a network server, you must boot (start) your system using CD-ROM, tape, or diskettes. In section “B. Start the System,” you should follow the instructions for the type of boot media you are using. When the network icon again reappears in the text, switch back to using the instructions next to that icon.



6. Locate your *boot* media.

Note: Your boot media may be different from the media containing your system backup. For example, you may be booting from CD-ROM but installing the system backup from tape.

7. Continue with the next section, "Procedural Overview."

Procedural Overview

This chapter contains instructions for the following sections:

- A . Complete the BOS Installation Plan
- B . Start the System
- C . Change the Current System Settings
- D . Begin the Installation Process
- E . Set up the Display Device
- F . Setting Up an ASCII Terminal
- G . Read the BOS README file
- H . Set the Date and Time
- I . Reconfiguring Your Network Software.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin on the next page. This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of the Base Operating System and only need a minimal set of instructions, you can skip to page 3-35 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin in the next section below.

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning" and complete the BOS Installation Plan. Then, return here and continue with the next section, "B. Start the System."

B. Start the System

1. If your system is turned OFF, go to step 2. If your system is ON, use the following procedures to shut down the system.

- a. If you are not already logged in as root, log in as root now.
- b. Type the following:

```
shutdown
```

and press Enter.



Note: The shutdown process is complete when the system displays the message `Halt completed ...` on your display screen.

- c. When the shutdown process is complete, turn off your system unit. Continue with step 2.
2. Turn the system key to the SECURE position.

Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order, so the system unit can properly identify the attached devices during the startup (boot) process.

3. Turn on all attached external devices, such as terminals, tape drives, monitors, and external disk drives.

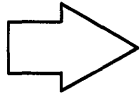


Note: If you are using an ASCII terminal, make sure that the terminal's line speed (baud rate) = 9600, word length (bits per character) = 8, parity = no (none), and number of stop bits = 1.

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 the attributes. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set the attributes.

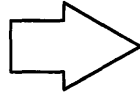
4. Turn the system unit power switch to the ON position.
5. After several minutes, the 200 code will appear on the three-digit LED display that is mounted in the system unit.

6. Do one of the following:



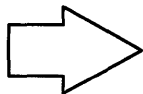
Insert the Version 3.2 CD-ROM into a disc caddy, and insert the caddy into your CD-ROM drive.

Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it.



Insert the tape that contains the system backup. This tape must have been created with the SMIT Backup the System menu or from the command line using the **mkszfile** and **mksysb** commands.

Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.



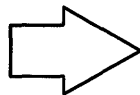
Insert the Version 3.2 BOS Boot diskette into the diskette drive.

Note: Make sure that the BOS Boot diskette has the same version number as your BOS diskettes.

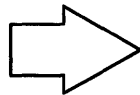
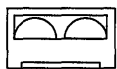
7. Turn the system key to the SERVICE position.

8. Press the yellow system Reset button twice in quick succession.

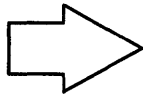
9. Your system will begin booting (starting). A series of codes will immediately appear on the system unit three-digit LED display.



If you are booting from CD-ROM, go to step 12.



If you are booting from tape, go to step 12.



If your system has one of the following display adapters installed, go to step 10. Otherwise go to step 11.

Note: If you ordered an adapter with your system, the adapter name will be listed on your "About Your Machine" document.

- POWER Gt3 Midrange graphics adapter
- POWER Gt4 Midrange graphics adapter
- POWER Gt4x Midrange graphics adapter
- High Speed 3D Graphics Accelerator
- Any graphics adapter

If your system does *not* have one of the above adapters installed, go to step 11.

10. When c07 appears on the three-digit LED display, continue with step a.

- a. Remove the diskette from the diskette drive and insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).

Note: When c07 appears the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step b.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

- b. When c07 appears the second time, remove the diskette in the drive and insert the BOS Display diskette.
Continue with step 12.

11. When the c07 code appears on your three-digit LED system display, remove the diskette in the drive and insert the BOS Display diskette into the diskette drive.

Note: When c07 appears the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step 12.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

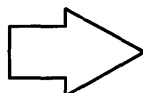
12. The screen may stay blank for several minutes. Then, c31 will appear on the three-digit LED display. Each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.



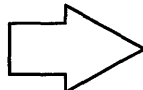
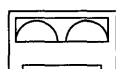
Note: During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right Shift key.

Console refers to the keyboard and display device. The system is asking which console you want to use as the system console. The system console is the one you will use for your system administration tasks.

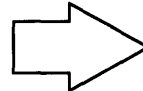
Press the specified keys only on the console that you want to use as your system console.



Go to step 14.



Go to step 14.



Go to step 13.

13. A message similar to the following is displayed:

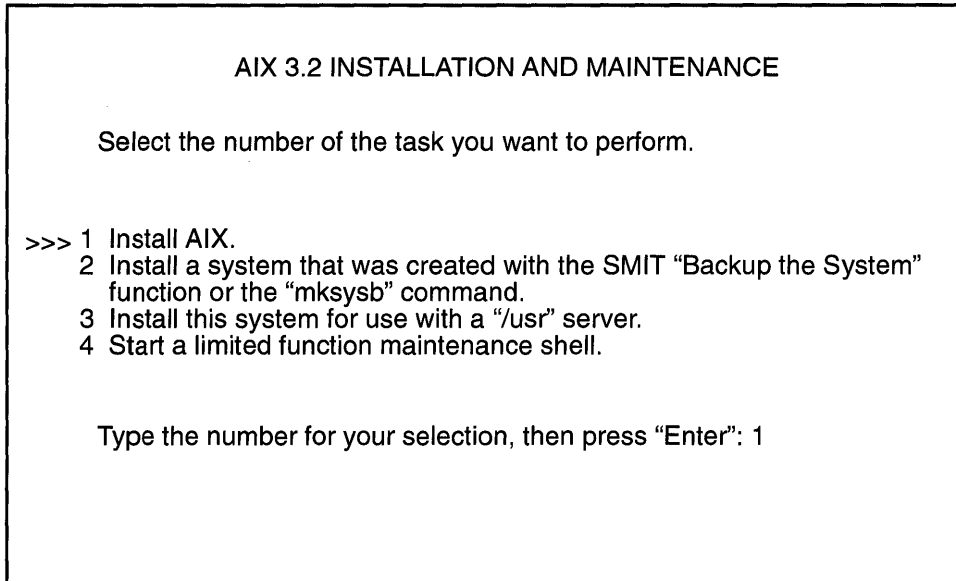
Insert BOS Install/Maint Diskette and Press Enter.

When you see this message, remove the Display diskette, insert the BOS Install/Maint diskette, and press Enter.

14. A series of messages is displayed. This may take several minutes.

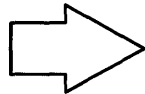
Note: It is normal for the system to move the tape back and forth during this period.

A screen similar to the following is displayed:

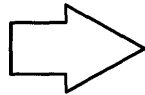
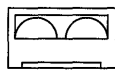


Note: The >>> (arrows) on this menu indicate the default selection.

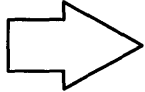
During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key above the right Shift key.



Continue with step 15.



Continue with step 15.



Remove the BOS Install/Maint diskette from the diskette drive. Then continue with step 15.

15. To select **2. Install a system that was created with the SMIT Backup the System function or the mksysb command**, type the following:

2

and press Enter.

Continue with the next section, "C. Change the Current System Settings."

C. Change the Current System Settings



Note: Do *not* select 0 on the following Current Systems Settings screen until after you have read all of the instructions in section C.

A screen similar to the is following displayed:

CURRENT SYSTEM SETTINGS	
This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter	
	CURRENT CHOICE
1 LOCALE (language)	C (POSIX)
2 INPUT Installation Device	150 mb Tape: /dev/rmt0
3 DESTINATION Disks	00-01-00-00
4 STARTUP (Boot) Device	00-01-00-00
99 Return to previous menu	
0 Install the AIX base operating system with the current settings	
Type the number for your selection, then press Enter : 0	



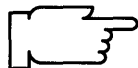
Warning: When updating from Version 3.1.x to 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Continue with the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.



Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device, continue with the following procedure.

PROCEDURE

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following is displayed:

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will be the source of the software you are going to install.

	DEVICE TYPE	PATHNAME	LOCATION CODE
	1 Diskette:	/dev/fd0	00-00-0D-00
	2 8mm Tape:	/dev/rmt0	00-08-00-30
>>>	3 CDROM:	/dev/cd0	00-08-00-40
	4 Token-Ring:	/dev/tr0	00-00
	5 Token-Ring:	/dev/tr1	00-01
	6 Standard Ethernet:	/dev/en0	00-02
	7 IEEE 802.3 Ethernet	/dev/et0	00-02:
	8 Standard Ethernet	/dev/en1	00-03:
	9 IEEE 802.3 Ethernet	/dev/et1	00-03:

99 Return to previous menu

Type the number for your selection then press ENTER: 3

2. If you are installing from the system backup image from a network installation server, skip to step 5.
If you are using another type of installation device, continue with step 3.
3. Type the number for the device supplying the software you want to install and press Enter.
4. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Skip to the next section, "Destination Disk," beginning on page 3-15.

5. Type the number for the network device supplying the software you want to install and press Enter.

The exact appearance of the screen that appears will vary according to the type of network device you are using. The following example shows the screen that appears if you select an Ethernet High-Performance LAN adapter. However, use the procedures that follow for all versions of this screen.

The following is an example of the screen that appears when you select an Ethernet High-Performance LAN adapter:

ENTER NETWORK PARAMETERS		
Enter the network parameters that will allow this machine to access the network install server over the en0 network interface.		
1	Client address: (Network address of this machine.)	11.11.11.11
2	Server address: (Network address of the network install server.)	11.111.111.111
3	Gateway address: (Optional, required if network is on a subnet.)	
4	Subnet mask: (Optional, required if network is on a subnet.)	444.444.444.444
5	Ethernet connection type: (bnc or 15 pin d-type)	15 pin d-type
99	Return to previous menu	
0	Commit current network settings and return to Settings Menu	
Type the number for your selection, then press "Enter": 0		

If all of the information on the screen is already set correctly, skip to step 15. Otherwise continue with step 6.



Note: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

6. Type the following :

1

and press Enter

The cursor is at the entry field for client IP Address. This is the address of the machine you are installing BOS on.

7. Refer to your Network Parameters Worksheet. Type the client IP address and press Enter.

8. Type the following:

2

and press Enter.

The cursor is at the entry field for server IP Address. This is the address of the installation server.

9. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

10. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

11. If you are *not* using a gateway, press Enter.

If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.

12. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

13. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

14. For item 5 on this menu, you have two choices:

- If you are using ethernet, select **bnc** or **15 pin d-type**.
- If you are using token ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.



Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

15. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

16. Go to the next section, "Destination Disk."

Destination Disk

This section describes how to change the hard disk or disks where the backup image will be installed. The location codes of the hard disks are displayed on the CHANGE DESTINATION HARD DISK(S) screen in the LOCATION column. 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 under Vital Product Data and Location Codes in *POWERstation and POWERserver Diagnostic Programs Operator Guide*.



Warning: It is extremely important that you install to the correct destination. If your destination disks are not empty, then all of the existing data on the destination disks will be destroyed during BOS installation.

If you need to change the destination disk or disks, continue with the following procedure. If you do not need to change the destination disk, go to the next section called "Startup (Boot) Device."

PROCEDURE

1. To select **DESTINATION Disks** at the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following is displayed:

CHANGE DESTINATION HARD DISK(S)					
Select the Destination Hard Disks. At least one bootable disk must be selected. If necessary, more than one hard disk may be selected. To cancel a selection, enter the number a second time. Current selection is indicated by >>>.					
>>>	1	00-07-00-00	320	00014099342d572c	Yes
>>>	2	00-07-00-10	320	00014099342d572c	No
99	Return to previous menu				
0	Commit current selection and return to Settings Menu				
Type the number for your selection, then press Enter : 0					

Note: The exact appearance of this screen will vary according to the configuration of your system. In this example, the system has two hard drives – each is 320 megabytes in size. The fact that the disks have volume group ID numbers indicates that they are not empty. Together they make up the volume group identified by the number 00014099342d572c.

2. Type the number for the hard disks to which you want to install your software and press Enter. You can select multiple disks.
3. When you have finished selecting disks, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Startup (Boot) Disk," on page 3-17.

Startup (Boot) Disk

This section describes how to select the hard disk within the group of destination disks that will contain the startup (boot) image. This is the hard disk that will be used to start your system after BOS is successfully installed and you reboot the system.

PROCEDURE

1. To select **STARTUP (Boot) Disk** at the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following is displayed:

```
CHANGE STARTUP DISK

Choose the ID# of the startup (boot) disk.

STARTUP DISK
>>> 1 00-01-00-00

99 Return to previous menu

Type the number for your selection, then press ENTER: 0
```

2. Type the number for the disk on which you want your startup (boot) image to reside, and press Enter.

3. When you have finished, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

4. Go to the next section, "D. Start the Installation Process," beginning on page 3-18.

D. Start the Installation Process

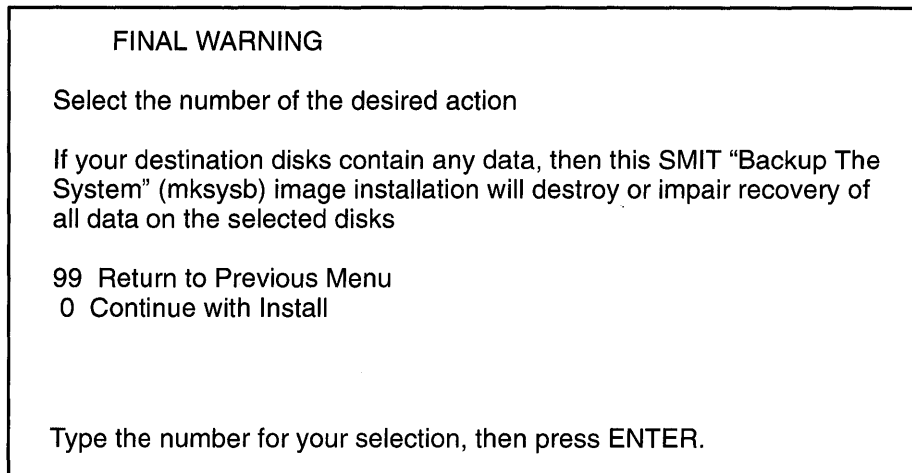
When you have finished setting all of the values on the Current System Settings menu, you can instruct the system to begin installing the backup image.

1. To select **Install the Base Operating System with the current settings** at the Current System Settings menu, type the following:

0

and press Enter.

A screen similar to the following is displayed:



2. To begin installing the system, type the following:

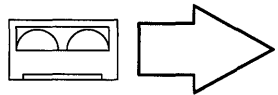
0

and press Enter.

If within a few seconds you see a `Device is not ready` message, go to step 3. If this message does *not* occur, go to step 4.

3. You probably selected the wrong input device. If this error occurs, you *must* return to step 6 in section "B. Start the System" on page 3-7 and repeat the install procedure.
4. Do one of the following:

Note: If you are using a network input device, make sure and follow the instructions next to the network icon from this point on.



Go to step 5.



Go to step 5.



Go to step 6.

- 5. A message similar to the following is displayed:

Please insert the first BOS backup tape
and press Enter to continue ...

Insert the first BOS backup tape or diskette and press Enter. Continue with step 10.

- 6. In a few seconds, the following messages are displayed:

```
netinstall  
contacting server.....
```

Your client machine is contacting the installation server and requesting the Network Install File Selection menu.



Note: If the installation server cannot be contacted, a system message displays and the Current System Settings menu reappears. Reselect item **1 INPUT Installation Device** and see if your adapter and addresses are set correctly. If these items are correct, contact your network administrator.

- 7. When the installation server has been contacted, the Network Install File Selection menu will appear. From this menu, you select the software you want to install. The appearance of this menu will vary depending on the software that has been loaded on the server.

A screen similar to the following is displayed:

NETWORK INSTALL FILE SELECTION

- 1. /inst.images/risc_sys6000/3.2/X11rte
- 2. /inst.images/risc_sys6000/3.2/bos.obj.mkysyb
- 3. /inst.images/risc_sys6000/3.2/bosnet
- 4. /inst.images/risc_sys6000/3.2/bssiEn_US

- 99. Return to CHANGE SETTINGS menu
- 0. Continue with Network Install

Choose the ID# of the file(s) to select or exclude

- 8. Your system administrator should have given you the name of the backup image you want to install. Type the ID number for the name of the backup image you want to install. Then press Enter.

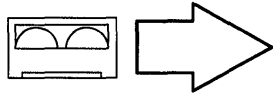
- 9. To begin the installation, type the following:

0

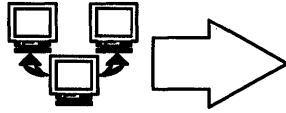
and press Enter.

- 10. As the system begins installing the backup system image, system messages will be displayed as the following activities occur:

- File systems are created.
- Files are restored.



Note: When the screen shown on the next page appears (this will take a while) continue with step 11.



Note: When the screen shown on the next page appears (this will take a while) continue with step 11.



Note: As the installation process continues, a message similar to the following may display when it is time to insert another diskette:

```
pax: Ready for volume 2.  
pax: Type "go" when ready to proceed (or  
"quit" to abort):
```

a. Insert the next diskette, type the following:

```
go
```

and press Enter.

Continue inserting diskettes when prompted.

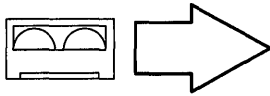
b. When the following screen appears (this will take a while), go to step 11.

Note: There are two error messages that may be displayed during BOS installation that you can ignore. The messages state that no software products were found and that no valid products were left to process. These messages are a normal part of the install process and are not indicative of any errors.

AIX Base Operating System installation is complete.
Please perform the following three steps to activate the changes made during this installation.

1. Make sure your installation media (tape, diskette, etc.) has been removed from the input device.
2. Turn the system key to the NORMAL position.
3. Press Enter to restart (reboot) the system.

11. Remove the tape or diskette from the drive.



Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

12. If the backup image source machine was *not* configured for network communications, skip to step 13.

If the source system was configured for network communications, your target system now has the same network configuration and address as the source machine. If your target system is connected to the network, network communications for both machines will be disrupted when you restart this target system.



Warning: This can cause total disruption of network communications for all machines on your network. To prevent this from happening, disconnect your target system's network cable before continuing. Later in this chapter you will be told when to reconnect the cable.

13. Turn the System key to the NORMAL position.

14. Press Enter to shut down and reboot the system. System messages will appear as the system goes through the shutdown process. As the system reboots, the screen may go blank for a few minutes.

Note: If your console device is different than the device saved in the backup, the system may do a shutdown and a second boot to reassign the console device.

When the system completes the boot (startup) process, a login prompt is displayed on the console.

15. To log in to the system as root, type the following:

```
root
```

and press Enter.

A system prompt appears.

Note: If the `root Password:` prompt appears, type in the root password that was active on the source system when the backup was created.

Your Base Operating System is now installed.

Note: Although a message may appear on the screen instructing you to read the README files, it is not necessary to read those files at this time.

16. Go to the next section, "E. Set Up the Display Device" beginning on page 3-22.

E. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

1. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.
2. To see what display name is stored in TERM, type the following:

```
echo $TERM (note that TERM is in capital letters),
```

and press Enter.

The system responds with the name of the type of display the system thinks you are using.

Possible responses to the **echo TERM** command:

If TERM = dumb The system was unable to automatically recognize your display. You must manually set the display name. Go to step 3.

If TERM = hft And you are using an hft such as IBM models 5081, 6091, or 8508, then go to the section "G. Read the BOS README File" on page 3-26. If you are not using an hft, go to step 3.

If TERM = a specific model Such as `ibm3151` and the number is correct, go to "F. Setting Up an ASCII Terminal" on page 3-24. If the number is wrong, go to step 3.

3. Use the following procedures to manually set the TERM name.
 - a. If you are using a VT100 terminal, then your TERM name is `vt100`; skip to step d. If you are not using a VT100, continue with step b.
 - b. Display names must be typed in a specific format. To see the terminfo list of the valid display names, type the following:

```
ls /usr/share/lib/terminfo/x        (where x is the first letter (not capitalized)
of the name of the manufacturer or type of
your display. For example, if you have an
IBM display, you would type ls
/usr/share/lib/terminfo/i, where
i stands for IBM.)
```

and press Enter.

- c. Search the list and find the correct format for the name of your display and write it down. Make careful note of whether or not the letters are capitalized. For example, for a model 3151 display, the list will show `ibm3151` as the correct display name.

d. Type the following:

```
export TERM=xxx
```

 (where `xxx` is the exact display name that you copied from the terminfo list.)

and press Enter.

For example, if you are using a 3151, you would type `export TERM=ibm3151` and then press Enter.

4. The TERM name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step 3d every time you log on using this terminal, you should perform the following steps:

a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second “/” are the device name. In this example it is `tty0` (note that the last character in this example is a zero, not the letter “o”).

b. Type the following:

```
chdev -a term=xxx -l zzz
```

(where `xxx` is the display name you used in step 3d and `zzz` is the tty device name you found in step 4a.)

Note: The `-l` in this command is a lowercase “L” and the `term` is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0` changed.

Your terminal should now be set correctly. Continue with the next section, “F. Setting Up an ASCII Terminal,” beginning on page 3-24.

F. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments).

If you are using an hft such as a model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the section "G. Read the BOS README File" on page 3-26.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE

1. To see what locale (language) is stored in the LANG variable, type the following:
(where LANG is in capital letters)

```
echo $LANG
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

C			(POSIX)
en_GB	or	En_GB	(Great Britain)
en_JP	or	En_JP	(Japan)
en_US	or	En_US	(United States)

YES: The system displayed one of the above locales, go to the next section "G. Read the BOS README File" on page 3-26.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo LANG** command a *lower case* letter?

YES: It's a *lower case* letter, go to the next section, "G. Read the BOS README File" on page 3-26.

NO: It's an *upper case* letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the ".in" suffix. Make careful note whether or not the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see what tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname the tty device. For example, it may display `/dev/tty0`. The characters after `/dev/tty` are the numbers identifying your tty device.

7. To set the input and output map files, type the following:

(where `-l` is a lower case "L", `x` is the number identifying your tty from step 6 and *mapfile* is the name you wrote down from the `termmap` listing in step 5.)

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section, "G. Read the BOS README File," beginning on page 3-26.

G. Read the BOS README File

A README file is an on-line document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software. It is important that you read the installation section of the BOS README file before you continue. This section will list any changes that you should make to the procedures in the rest of this chapter. If you have already read this README, you can skip to “H. Set the Date and Time” on page 3-27.

The following procedures contains instructions for viewing the BOS README. As you read the README, write any installation procedure corrections into this manual.

When you are done with the installation section of the README file, return to page 3-27, and continue with the next section of this chapter called “H. Set the Date and Time.”

PROCEDURE:

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:
(**Note:** there are no blank spaces in the following command.)

```
/2.Installation
```

and press Enter.

4. The installation notes appear.

To show the next page Press Enter

To show the previous page Type -1 and press Enter.

Read the notes and write the specified corrections into this manual.

5. When you are finished with the “Installation” section, type the following at the colon (:) prompt:

```
q
```

and press Enter.

The system prompt (#) reappears.

6. Continue with the next section of this manual, “H. Set the Date and Time,” beginning on page 3-27.

H. Set the Date and Time

1. Type the following:

date

and press Enter.

The system displays the date and time.



Note: Time on your system is expressed in terms of a 24-hour clock, often called "military time." In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to step 11 on page 3-30.
- To change the date and time, go to step 2.

2. Type the following:

smit startup (or smit -C startup if you are working in AIXwindows)

and press Enter.

A screen similar to the following is displayed:

SYSTEM STARTUP MENU

Your Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

Backup the System
System Environments
Software Products
TCP/IP
NFS

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

3. Select **System Environments** and press Enter.

A screen similar to the following is displayed:

System Environments

Move cursor to desired item and press Enter.

- Assign the Console
- Change Number of Virtual Terminals at Next System Restart
- Change / Show Date, Time, and Time Zone
- Change / Show Characteristics of Operating System
- Manage Language Environment
- Change Number of Licensed Users

4. Select **Change / Show Date, Time, and Time Zone** and press Enter. A screen similar to the following is displayed:

System Environments

Move cursor to desired item and press Enter.

- Assign the Console
- Change / Show Date, Time, and Time Zone
- Change Language Environment
- Change Number of Licensed Users

Use DAYLIGHT SAVINGS TIME?

Move cursor to desired item and press Enter.

- # Does this time zone go on
- # DAYLIGHT SAVINGS TIME?
- #
- 1 yes
- 2 no

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

5. You have two choices:

- If your time zone uses daylight savings time, move the cursor to *yes* and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to *no* and press Enter.

A screen similar to the following is displayed:

System Environments

Move cursor to desired item and press Enter.

CUT (Coordinated Universal Time) Time Zone

Move cursor to desired item and press Enter.

[TOP]

(CUT0GDT)	Coordinated Universal Time (CUT)	
(TZ 1DT1)	Azores; Cape Verde	(CUT -1)
(TZ 2DT2)	Falkland Islands	(CUT -2)
(TZ 3DT3)	Greenland; East Brazil	(CUT -3)
(AST4ADT)	Central Brazil	(CUT -4)
(EST5EDT)	Eastern U.S.; Columbia	(CUT -5)
(CST6CDT)	Central U.S.; Honduras	(CUT -6)

[MORE...12]

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

6. Move the cursor to highlight your time zone and press Enter. Use the up and down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following is displayed:

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all Desired changes.

Old time zone	[Entry Fields]
Time Zone	CST6CDT
Does this time zone go on daylight savings time?	yes
* YEAR (00-99)	[91]
* MONTH (01-12)	[04]
* DAY (01-31)	[15]
* HOUR (00-23)	[11]
* MINUTES (00-59)	[32]
* SECONDS (00-59)	[05]

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

7. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following is displayed:

```

                                COMMAND STATUS
Command: OK          stdout: yes          stderr: no

Before completion, additional instructions may appear below

Mon Apr 15 11:32:05 CST 1991

Now exit SMIT and log out and then back in so that any changes to date,
time, and time zone will be reflected in your current session.

F1=Help      F2=Refresh    F3=Cancel    F6=Command
F8=Image     F9=Shell      F10=Exit
```

8. Press F10 to exit SMIT.
 - If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Go to step 9.
 - If you did *not* change the time zone, you have finished setting the date and time. Go to step 11.
9. Use the following procedure to log off the system:

At the system prompt, type the following:

```
exit
```

and press Enter.

The login prompt is displayed. Continue with step 10.
10. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting the date and time. Continue with step 11.
11. If you disconnected your network cable before your rebooted your system, skip to section "I. Reconfiguring Your Network Software." If you did not disconnect your network cable, continue with step 12.
12. If the backup image you installed did not contain all of the optional software you need to install on this system, go to "Chapter 6. Optional Software Installation." If you do *not* need to install additional optional software, go to "Chapter 8. Post-Installation Procedures."

I. Reconfiguring Your Network Software

If the source machine for the backup image you just installed was already configured for network communications, your target system now has the same network configuration and address as the source machine. This will disrupt network communications for both machines. Additionally, the network configuration settings may not be correct for the hardware on the target machine. Therefore you must reconfigure the network communication settings on this machine before you try to use the network.



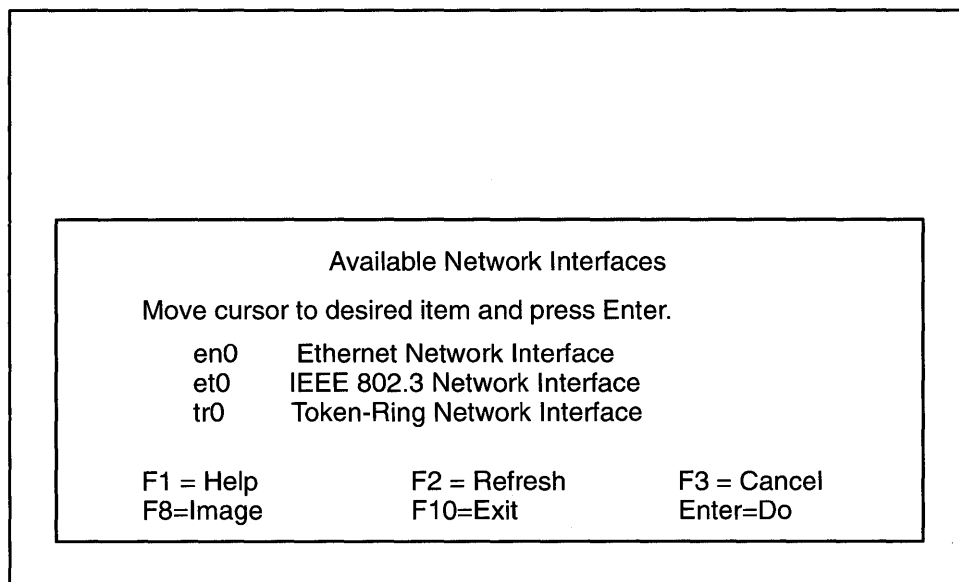
Warning: A conflicting or incorrect network configuration can result in total disruption of network communications for all machines on your network.

To reconfigure your network communication settings, continue with the next section, "Reconfiguring TCPIP."

Reconfiguring TCP/IP

1. Complete the TCP/IP Worksheet in "Chapter 16. Planning" on page 16-1.
2. Type the following:
`smit mktcpip` (or `smit -C mktcpip` if you are working in AIXwindows)
 and press Enter.

A screen similar to the following is displayed:



This is a list of the available network interfaces that your system can use for network communications.

Note: The content of this list varies according to what is installed on your system.

3. Move the cursor to highlight the type of interface you are using for network communications and press Enter.

The Minimum Configuration & Startup screen will appear. The exact contents of this screen will depend on the type of network adapter you selected.

For example, if you selected the Token-Ring Network Interface, a screen similar to the following is displayed:

Minimum Configuration & Startup

To delete existing configuration data, please use Further Configuration menu.

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]
* HOSTNAME	[]
* Internet ADDRESS (dotted decimal)	[]
* Network MASK (dotted decimal)	[]
* Network INTERFACE	tr0
NAMESERVER	
Internet ADDRESS (dotted decimal)	[]
Domain Name	[]
Default GATEWAY Address	[]
(dotted decimal or symbolic name)	
RING Speed	4
START TCP/IP daemons Now	no

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

If your source machine was configured for TCP/IP when the backup was made, the fields in this screen will contain the values for the source machine. You now need to change these to the correct values for the machine you performing the installation on (the target).

4. Use the following procedures for all versions of the above screen.



Note: Do *not* press Enter until you get to step 10.

Refer to your TCP/IP worksheet. Type the information from the worksheet to the following fields on the Minimum Configuration & Startup screen:

- HOSTNAME
- Internet ADDRESS
- Network MASK
- NAMESERVER Internet ADDRESS (if you have one)
- Domain Name
- Default GATEWAY Address (if you have one).



Note: Depending on your network configuration, you may not need to complete all of the entries on this screen.

5. Move the cursor to START TCP/IP daemons Now. Press the Tab key to change the default to yes.

6. You have two choices:
 - If you are using an Ethernet Network Interface, continue with step 7.
 - If you are using the Token-Ring Network Interface, skip to step 8.
7. If you need to change the setting for the type of cable you are using, move the cursor to `Your CABLE Type`. Press the Tab key to alternate between `bnc` and `dix`. Skip to step 9.
8. If you need to change the RING speed setting, move the cursor to `RING Speed`. Press the Tab key to alternate between the values 4 and 16. Continue with step 9.



Warning: If you are using Token-Ring, an incorrect ring speed setting can totally disrupt network communications for all systems on the network.

9. When you have finished making *all* your entries on this screen, confirm that the names and addresses are accurate.
 - If your entries are correct, go to step 10.
10. To start the TCP/IP configuration process, press Enter.
11. A **COMMAND STATUS** screen appears. When the `Command: status` indicator changes to `OK`, press F10 to exit SMIT.
12. Reconnect your network cable.
TCP/IP is now ready to use.
13. If the backup image you installed did not contain all of the optional software you need to install on this system, go to “Chapter 6. Optional Software Installation.”
If you do *not* need to install additional optional software, go to “Chapter 8. Post-Installation Procedures.”

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **backup** command, **pax** command, **sysck** command, **restore** command, **ls** command.

The Backup Overview in *General Concepts and Procedures* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *General Concepts and Procedures* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The file systems Overview in *General Concepts and Procedures* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network filesystem (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *General Concepts and Procedures* provides information on mounting files and directories, mount points, and automatic mounts.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000*.

Using SMIT in *Getting Started: Managing the IBM RISC System/6000*.

IBM RISC System/6000 Problem Solving Guide.

ADVANCED PATH: Installation from a System Backup

Continue with the next section when you are ready to begin the installation.

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning" and complete the BOS Installation Plan.

B. Start the System

1. Make sure your system is OFF.
2. Turn the system key to the SECURE position.
3. Turn on all attached external devices, such as tape drives, monitors, and terminals.
4. Turn the system unit power switch to the ON position.
5. After several minutes, the 200 code will appear on the three-digit LED display.
6. Insert the first BOS tape or BOS boot diskette.
7. Turn the system key to the SERVICE position.
8. Press the yellow system Reset button twice in quick succession.
9. If you are installing from tape, go to step 12.
10. When c07 appears on the three-digit LED display, insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
11. When c07 appears the second time, insert the BOS Display diskette.
12. When c31 appears on the three-digit LED display, select the device that you want to use as your console.
13. If you are installing from diskettes, insert the BOS Install/Maint diskette.
14. At the AIX 3.2INSTALLATION AND MAINTENANCE screen, select item 2.

C. Change the Current System Settings

1. To change the INPUT Installation Device, enter 1 and choose the installation device.
2. To change the DESTINATION Disks, enter 2 and choose your destination disks.
3. To change the STARTUP (Boot) Disk, enter 3 and choose your startup disk.

D. Start the Installation Process

1. From the Current System Settings screen, enter 0 to begin the installation.
2. From the FINAL WARNING screen, enter 0 to start the installation.

3. What is your installation media?

DISKETTES

- Insert the first SMIT mksysb backup diskette
- Insert each diskette when prompted.

NETWORK

- Choose the SMIT mksysb backup image from the Network Install File Selection menu.
- Enter 0 to continue the installation.

TAPE

- Insert each tape if prompted.

4. When the reboot screen appears, do the following:

- Remove the tape or diskette from the drive.
- Turn the System key to the NORMAL position.
- Press Enter to reboot the system.

5. After the system reboots, log in to the system as root.

E. Set Up the Display Device

1. If you are using an HFT, skip below to section “G. Read the BOS README File.”
2. Enter `export TERM=xxx` where `xxx` is your display name.
3. Enter `chdev -a term=xxx -l zzz` where `xxx` is your display name and `zzz` is the tty device you are using.

F. Setting Up an ASCII Terminal

1. If you are using a non-English locale (language), do the following:
 - Enter `ls /etc/nls/termmap` to list the available input and output map files.
 - Enter `setmaps -t mapfile` where `mapfile` is from the termmap listing.
 - Enter `chdev -l ttyzzz -a imap=mapfile -a omap=mapfile` where `zzz` is the tty device you are using and `mapfile` is from this termmap listing.

G. Read the BOS README File

Enter `pg /usr/lpp/bos/README` to read the “Installation” chapter of the BOS README file.

H. Set the Date and Time

1. Enter `date` to check the system date.
2. If the date is not correct, execute `smit chtz` to change the date.

I. Reconfiguring Your Network Software

If your system is connected to a network, execute `smit mktcpip` to reconfigure TCP/IP.

Chapter 4. BOS Installation from Network

This chapter contains the procedures for installing the Version 3.2 Base Operating System (BOS) from a Network Installation Server. The chapter explains three different methods for installing BOS: New Installation, Preservation Installation and Complete Overwrite Installation. The instructions are combined in one chapter because the procedures for the three types of installation are very similar. The differences in the procedures will be pointed out where they occur.

A *volume group* is one disk or a group of hard disks on your system. A *root volume group* is a group of hard disks in which the root portion of BOS is stored. This means that a root volume group can be used to boot (start up) your system. It is possible to have multiple root volume groups, but only one is necessary.

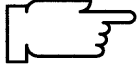
1. *New Installation* is performed when the hard disk or disks you are installing BOS onto are *empty*. A hard disk is empty if it does not contain any data or if it contains some data, but it does not contain a root volume group (it is not bootable).
2. *Preservation Installation* installs the Version 3.2 Base Operating System (BOS) and preserves the existing root volume group on your system. This method only overwrites the `/usr` (`/usr`), temporary (`/tmp`), `/var`, and root (`/`) file systems of the previously installed version. Use this installation procedure when a previous version of BOS is installed on your system, and you want to preserve the root volume group, including your system configuration.

A Preservation Installation will automatically preserve only some of the data on your system (the contents of the root volume group). It will still be necessary for you to use the Upgrade Utilities or the System Management Interface Tool (SMIT) to finish restoring all of your system data.

3. *Complete Overwrite Installation* is used when a previous version of BOS is installed on your system, and you want to completely overwrite the existing version of BOS. This procedure may impair recovery of data or destroy all existing data on your hard drives.

Use Complete Overwrite when:

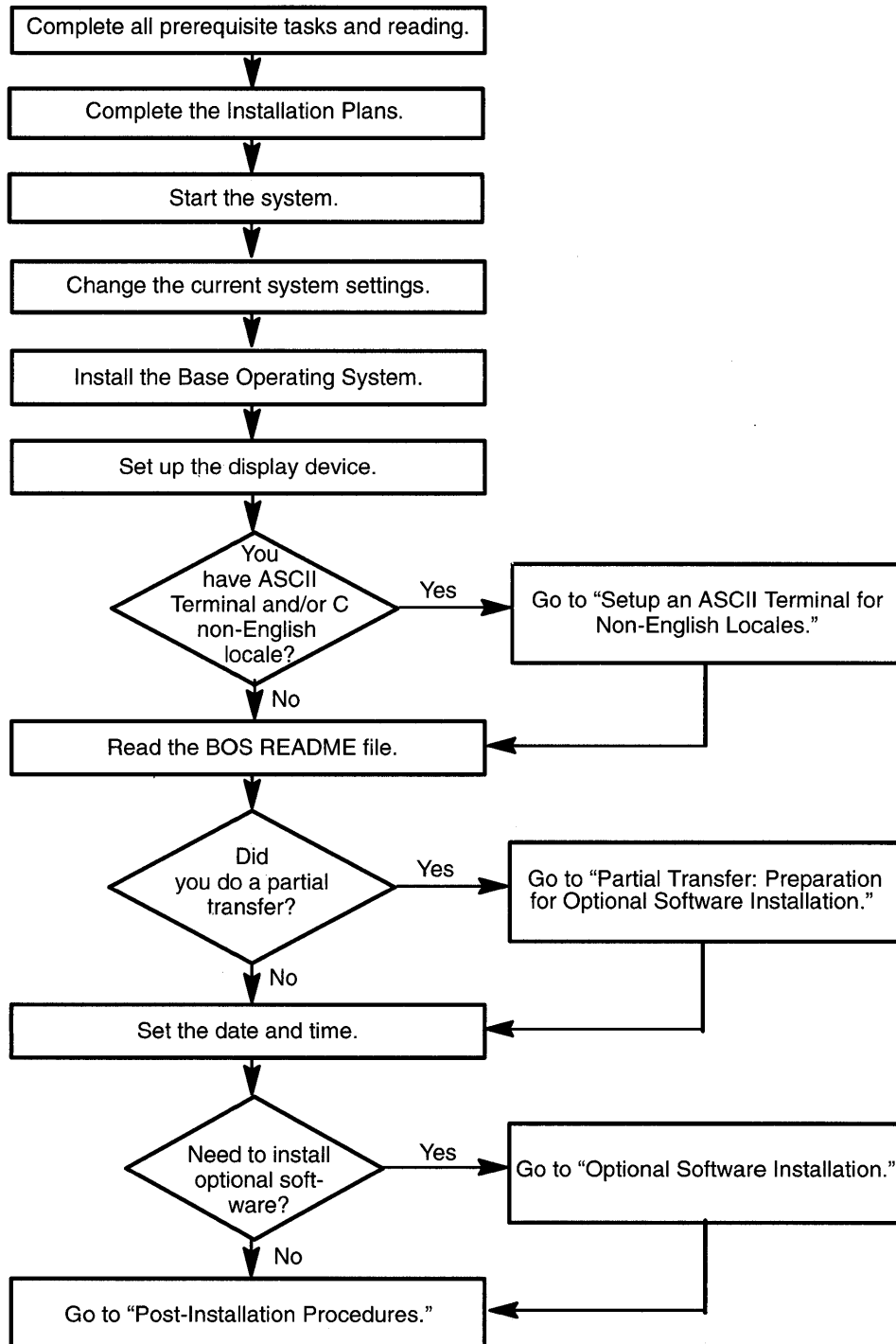
- You want to install onto disks that contain an existing root volume group, but you want to completely overwrite the root volume group.
For example, this might occur if your root volume group has become corrupted.
- You want to reassign your hard disks.
For example, you have four hard disks and they all belong to one root volume group and you want to separate the disks into two volume groups. First do a Complete Overwrite Installation and select the first two disks as the installation destination. These two disks become the root volume group. You then use SMIT to combine the remaining two disks into a second (nonroot) volume group. The result is two separate volume groups. All of the operating system files are in the root volume group and you can store user data in the second volume group. When the operating system is updated or reinstalled, the user's data is unaffected.



Warning: The Complete Overwrite procedure overwrites the selected destination disks. This means that after the installation is complete, you will have to manually configure your system using 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 Preservation Installation procedure described in this chapter.

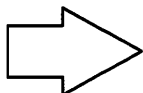
Flowchart for BOS Installation from Network

This flowchart outlines the basic steps you must perform to install the Version 3.2 Base Operating System from a Network Installation Server.

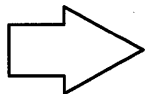
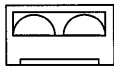


Prerequisite Tasks or Conditions

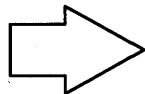
1. Before using the procedures in this chapter, you must first create a network installation server as described in “Chapter 9. Creating an Installation Server.”
2. All hardware is installed, including any devices such as external tape drives.
3. You should be familiar with the procedures for operating your hardware. If you are not familiar with your hardware, read “Chapter 18. Hardware Basics.”
4. You need to understand how to use the System Management Interface Tool (SMIT). If you are not familiar with SMIT, you should read “Chapter 19. SMIT Basics” and then return here and continue.
5. Locate the key for the key lock on your system unit.
6. Locate your *boot* media.



Do the following only if you are booting from CD-ROM:
Find the CD-ROM labelled Version 3.2.



Do the following only if you are booting from tapes.
Find the tapes labelled Version 3.2



Do the following only if you are booting from diskettes.
Find the following diskettes:

BOS Boot, Display, Install/Maintenance, and, if appropriate,
BOS Display Extensions diskettes.

If you are using a display adapter card, be sure that you have
the display diskette from that manufacturer.

Note: If you are not sure whether or not you have a display
adapter installed, consult the “About Your Machine” document
that was shipped with your system. It contains a list of the
factory hardware shipped with your system.

7. If you are doing a New Installation, skip to the next section, "Procedural Overview."

If you are doing a Preservation Installation or Complete Overwrite Installation, it is recommended that you locate or create a backup of your system before you begin the installation. Go to "Chapter 15. Backing Up Your System" and then return here and continue with the next section, "Procedural Overview."

Procedural Overview

This chapter contains instructions for the following sections:

- A . Complete the Installation Plan
- B . Start the System
- C . New or Complete Overwrite: Change the Current System Settings
- D . Preservation: Change the Current System Settings
- E . Install the Version 3.2 Base Operating System (BOS)
- F . Set up the Display Device
- G . Setting Up an ASCII Terminal
- H . Read the BOS README file
- I . Partial Transfer: Preparations for Optional Software Installation
- J . Set the Date and Time
- K . BOS Installation Completion Procedures.

Continue with the next section when you are ready to begin the installation.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin on the next page. This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of the Base Operating System and only need a minimal set of instructions, you can skip to page 4-49 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin on the next page.

A. Complete the Installation Plan

Go to "Chapter 16. Planning" and complete the BOS Installation Plan. Then return here and continue with the next section, "B. Start the System."

B. Start the System

1. If your system is turned OFF, go to step 2. If your system is ON, use the following procedures to shut down the system.

- a. If you are not already logged in as root, log in as root now.

- b. Type the following:

```
shutdown
```

and press Enter.

Note: The shutdown process is complete when the system displays the message
Halt completed ... on your display screen.

- c. When the shutdown process is complete, turn off your system unit.
Continue with step 2.

2. Turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, tape drives, monitors, and external disk drives.

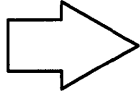


Note: If you are using an ASCII terminal, make sure that the terminal's line speed (baud rate) = 9600, word length (bits per character) = 8, parity = no (none), and number of stop bits = 1.

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 the attributes. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set the attributes.

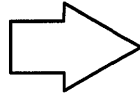
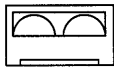
4. Turn the system unit power switch to the ON position.
5. After several minutes, the 200 code will appear on the three-digit LED display on the system unit.

6. Do one of the following:



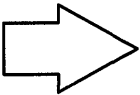
Insert the Version 3.2 CD-ROM into a disc caddy and insert the caddy into your CD-ROM drive.

Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it.



Insert the Version 3.2 tape into your tape drive.

Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.



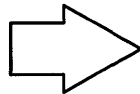
Insert the Version 3.2 Boot diskette into the diskette drive.

Note: Make sure that the BOS Boot diskette has the same version number as your BOS diskettes.

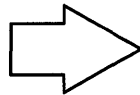
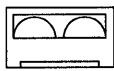
7. Turn the system key to the SERVICE position.

8. Press the yellow system Reset button twice in quick succession.

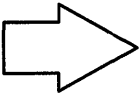
9. Your system will begin booting (starting). A series of codes will immediately appear on the system unit three-digit LED display.



If you are installing from CD-ROM, go to step 12.



If you are installing from tape, go to step 12.



If your system has one of the following display adapters installed, go to step 10. Otherwise, go to step 11.

Note: If you ordered an adapter with your system, the adapter name will be listed on your "About Your Machine" document as one of the following:

- POWER Gt3 Midrange graphics adapter
- POWER Gt4 Midrange graphics adapter
- POWER Gt4x Midrange graphics adapter
- High Speed 3D Graphics Accelerator
- Any graphics adapter

If your system does *not* have one of the above adapters installed, go to step 11.

10. When c07 appears on the three-digit LED display, continue with step a.

- a. Remove the diskette from the diskette drive and insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step b.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

- b. When c07 appears the second time, remove the diskette from the drive and insert the BOS Display diskette.

Continue with step 12.

11. When the c07 code appears on your three-digit LED system display, remove the diskette from the drive and insert the BOS Display diskette.

Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step 12.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

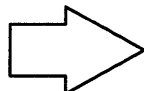
12. The screen may stay blank for several minutes. Then, c31 will appear on the three-digit LED display. Each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.



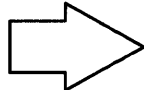
Note: During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right Shift key.

Console refers to the keyboard and display device. The system is asking which console you want to use as the system console. The system console is the one you will use for your system administration tasks.

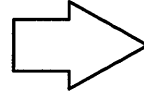
Press the specified keys only on the console that you want to use as your system console.



Go to step 14.



Go to step 14.



Go to step 13.

13. A message similar to the following is displayed:

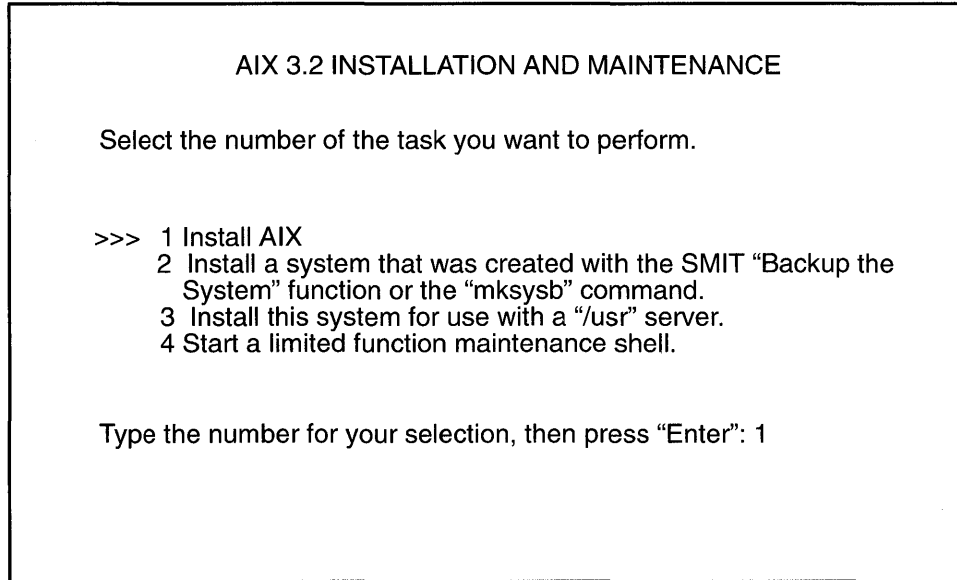
Insert BOS Install/Maint Diskette and Press Enter.

When you see this message, remove the Display diskette, insert the BOS Install/Maint diskette, and press Enter.

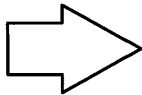
14. A series of messages is displayed. This may take several minutes.

Note: If you are booting from tape, it is normal for the system to move the tape back and forth during this period.

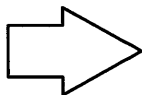
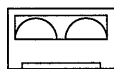
A screen similar to the following is displayed:



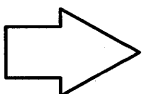
Note: The >>> (arrows) on this menu indicate the default selection. During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right Shift key.



Continue with step 15.



Continue with step 15.



Remove the BOS Install/Maint diskette from the diskette drive. Then continue with step 15.

15. Press Enter to select **Install AIX**.

16. If you are doing a new installation, go to section "C. New or Complete Overwrite: Change the Current System Settings" on page 4-12.

If you are doing a Preservation or Complete Overwrite Installation, a screen similar to the following is displayed:

```
METHOD OF INSTALL

Select the number of the type of installation you want to perform

>>> 1 PRESERVATION INSTALL
      Preserves SOME of the data on the destination hard disk.
      Only overwrites the usr (/usr), temporary (/tmp), and root (/)
      file systems of the previously installed version AIX.

      2 COMPLETE OVERWRITE INSTALL
      May overwrite EVERYTHING on the destination hard disk.
      - If the destination disk is totally empty, select 2.
      - If AIX is already installed on the destination hard disk
      but there is nothing on the disk that you want to
      preserve, select 2.

      99 Return to previous menu

Type the number for your selection, then press Enter : 1
```

17. Select the method of install that you want to use by typing the appropriate number and then press Enter. The Current System Settings screen will then appear.

If you are doing a Preservation Installation, go to "D. Preservation: Change the Current System Settings" on page 4-19.

If you are doing a Complete Overwrite Installation, go to the next section "C. New or Complete Overwrite: Change the Current System Settings," beginning on the next page.

C. New or Complete Overwrite: Change the Current System Settings



Note: Do *not* select 0 on the following Current Systems Settings screen until after you have read all of the instructions in section C.

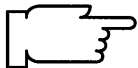
A screen similar to the following is displayed:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter

	CURRENT CHOICE
1 LOCALE (language)	C (POSIX)
2 INPUT Installation Device	150 mb Tape: /dev/rmt0
3 DESTINATION Disks	00-01-00-00
4 STARTUP (Boot) Device	00-01-00-00
99 Return to previous menu	
0 Install the AIX base operating system with the current settings	

Type the number for your selection, then press Enter : 0



Warning: When updating from Version 3.1.x to 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure.

If you do not need to change the locale, go to the next section entitled "Input Installation Device" on page 4-14.

PROCEDURE

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following is displayed:

```
CHANGE LOCALE
Select the number for the language/locale.

>>>  1 C (POSIX)
      2 Danish
      3 Dutch (Belgium)
      4 Dutch
      5 English (Great Britain)
      6 English (United States)
      7 Finnish
      8 French (Belgium)
      9 French (Canada)
     10 French (France)
     11 French (Switzerland)
     12 German (Switzerland)
     13 German
     14 Greek
     15 Icelandic

      16 Italian
      17 Japanese
      18 Norwegian
      19 Portuguese
      20 Spanish
      21 Swedish
      22 Turkish

     99 Return to previous menu
Type the number for your selection then press Enter: 1
```

2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.

The language you select will be automatically installed during BOS installation.

Note: Changes to LOCALE do not take effect until after BOS and your primary language software are installed, and your system is rebooted. The Latin-1 countries (U. S., Canada, western Europe) and Japan are supported by two code sets. After software installation is completed, users that want to change their language environment or code set should consult the InfoExplorer articles "Understanding Locale" and "How to Change Your Locale."

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

During Optional Software installation, make sure to select for installation any additional locales (languages) that you want to install.

Go to the next section , "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.



Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device continue with the following procedure. Even if the correct network device is already set, it is recommended that you do the following procedure to make sure that the network address settings are correct.

PROCEDURE

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following is displayed:

CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will be the source of the software you are going to install.

	DEVICE TYPE	PATHNAME	LOCATION CODE
	1 Diskette:	/dev/fd0	00-00-0D-00
	2 8mm Tape:	/dev/rmt0	00-08-00-30
>>>	3 CDROM:	/dev/cd0	00-08-00-40
	4 Token-Ring:	/dev/tr0	00-00
	5 Token-Ring:	/dev/tr1	00-01
	6 Standard Ethernet:	/dev/en0	00-02
	7 IEEE 802.3 Ethernet	/dev/et0	00-02:
	8 Standard Ethernet	/dev/en1	00-03:
	9 IEEE 802.3 Ethernet	/dev/et1	00-03:

99 Return to previous menu

Type the number for your selection then press ENTER: 3

2. Type the number for the device supplying the software you want to install and press Enter. For example, to select a Standard Ethernet network interface as shown in the previous screen, type 6 and press Enter.

A screen similar to the following is displayed:

ENTER NETWORK PARAMETERS		
Enter the network parameters that will allow this machine to access the network install server over the en0 network interface.		
1	Client address: (Network address of this machine.)	11.11.11.11
2	Server address: (Network address of the network install server.)	11.111.111.111
3	Gateway address: (Optional, required if network is on a subnet.)	
4	Subnet mask: (Optional, required if network is on a subnet.)	444.444.444.444
5	Ethernet connection type: (bnc or 15 pin d-type)	15 pin d-type
99	Return to previous menu	
0	Commit current network settings and return to Settings Menu	
Type the number for your selection, then press "Enter": 0		

If all of the information on the screen is already set correctly, skip to step 12. Otherwise continue with step 3.



Note: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

3. Type the following :

1

and press Enter.

The cursor is at the entry field for Client IP Address.

4. Refer to your Network Parameters Worksheet. Type the client IP address and press Enter.

5. Type the following:

2

and press Enter.

The cursor is at the entry field for Server IP Address.

6. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

7. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

8. If you are *not* using a gateway, press Enter.

If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.

9. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

10. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

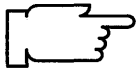
11. For item 5 on this menu, you have two choices:

- If you are using ethernet, select **bnc** or **15 pin d-type**.
- If you are using token ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.



Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

12. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

13. Go to the next section, "Destination Disk," beginning on the next page.

Destination Disk

This section describes how to change the hard disk or disks where the Base Operating System will be installed. The location codes of the hard disks are displayed on the CHANGE DESTINATION HARD DISK(S) screen in the LOCATION column. 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 under Vital Product Data and Location Codes in *POWERstation and POWERserver Diagnostic Programs Operator Guide*.



Warning: It is extremely important that you install to the correct destination since all of the existing data on the destination disk will be destroyed.

If you need to change the destination disk or disks, continue with the following procedure. If you do not need to change the destination disk, go to the next section, "Startup (Boot) Disk," on page 4-18.

PROCEDURE

1. To select **DESTINATION Disks** at the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following is displayed:

CHANGE DESTINATION HARD DISK(S)

Select the Destination Hard Disks. At least one bootable disk must be selected. If necessary, more than one hard disk may be selected. To cancel a selection, enter the number a second time. Current selection is indicated by >>>.

	LOCATION	SIZE (MB)	VOLUME GROUP ID	BOOTABLE DISK
>>> 1	00-07-00-00	320	00014099342d572c	Yes
>>> 2	00-07-00-10	320	00014099342d572c	No

99 Return to previous menu
0 Commit current selection and return to Settings Menu

Type the number for your selection, then press Enter : 0

2. Type the number for the hard disks to which you want to install your software and press Enter. You can select multiple disks.

3. When you have finished selecting disks, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Startup (Boot) Disk," on the next page.

Startup (Boot) Disk

This section describes how to select the hard disk within the group of destination disks that will contain the startup (boot) image. This is the hard disk that will be used to start your system after BOS is successfully installed and you reboot the system.

PROCEDURE

1. To select **STARTUP (Boot) Disk** at the Current System Settings menu, type the following:

4

and press Enter.

A screen similar to the following is displayed:

```
CHANGE STARTUP DISK

Choose the ID# of the startup (boot) disk.

STARTUP DISK
>>> 1 00-01-00-00

99 Return to previous menu

Type the number for your selection, then press Enter: 0
```

2. Type the number for the disk on which you want your startup (boot) image to reside, and press Enter.
3. When you have finished, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

4. Go to section "E. Install the Base Operating System" beginning on page 4-25.

D. Preservation: Change the Current System Settings



Note: Do *not* select 0 on the Current Systems Settings screen until after you have read all of the instructions in section D.

A screen similar to the following is displayed:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the base operating system. If these settings are correct type 0 and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter

	CURRENT CHOICE
1 LOCALE (language)	C (POSIX)
2 INPUT Installation Device	150 mb Tape: /dev/rmt0
3 DESTINATION root VG	00-01-00-00
99 Return to previous menu	
0 Install the base operating system with the current settings	

Type the number for your selection, then press Enter : 0



Warning: You must change the current system settings when updating from Version 3.1 to 3.2 *because the default settings will always be incorrect.*

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure.

If you do not need to change the locale, go to the next section entitled "Input Installation Device" on page 4-21.

PROCEDURE

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following is displayed:

CHANGE LOCALE

Select the number for the language/locale.

>>> 1	C (POSIX)	16	Italian
2	Danish	17	Japanese
3	Dutch (Belgium)	18	Norwegian
4	Dutch	19	Portuguese
5	English (Great Britain)	20	Spanish
6	English (United States)	21	Swedish
7	Finnish	22	Turkish
8	French (Belgium)		
9	French (Canada)		
10	French (France)		
11	French (Switzerland)		
12	German (Switzerland)		
13	German		
14	Greek		
15	Icelandic		
99	Return to previous menu		

Type the number for your selection then press Enter: 1

2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.

The language you select will be automatically installed during BOS installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Note: Changes to LOCALE (language) do not take effect until after BOS and your primary language software are 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 is the same code set that you were using in Version 3.1.x. After software installation is completed, users that want to change their language environment or code set should consult the InfoExplorer articles "Understanding Locale," "How to Change Your Locale," and "Understanding Code Set Strategy."

During Optional Software installation, make sure and select for installation any additional locales (languages) that you want to install.

Go to the next section, "Input Installation Device," beginning on the next page.

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.



Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device continue with the following procedure. Even if the correct network device is already set, it is recommended that you do the following procedure to make sure that the network address settings are correct.

PROCEDURE

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following is displayed:

```
CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will
be the source of the software you are going to install.

      DEVICE TYPE      PATHNAME      LOCATION CODE
1 Diskette:           /dev/fd0      00-00-0D-00
2 8mm Tape:           /dev/rmt0     00-08-00-30
3 CDRom:              /dev/cd0      00-08-00-40
4 Token-Ring:         /dev/tr0      00-00
5 Token-Ring:         /dev/tr1      00-01
>>> 6 Standard Ethernet: /dev/en0      00-02
7 IEEE 802.3 Ethernet /dev/et0      00-02:
8 Standard Ethernet  /dev/en1      00-03:
9 IEEE 802.3 Ethernet /dev/et1      00-03:

99 Return to previous menu

Type the number for your selection then press ENTER: 2
```

2. Type the number for the device supplying the software you want to install and press Enter. For example, to select a Standard Ethernet network interface as shown in the previous screen, type 6 and press Enter.

A screen similar to the following is displayed:

ENTER NETWORK PARAMETERS		
Enter the network parameters that will allow this machine to access the network install server over the en0 network interface.		
1	Client address: (Network address of this machine.)	11.11.11.11
2	Server address: (Network address of the network install server.)	11.111.111.111
3	Gateway address: (Optional, required if network is on a subnet.)	
4	Subnet mask: (Optional, required if network is on a subnet.)	444.444.444.444
5	Ethernet connection type: (bnc or 15 pin d-type)	15 pin d-type
99	Return to previous menu	
0	Commit current network settings and return to Settings Menu	
Type the number for your selection, then press "Enter": 0		

If all of the information on the screen is already set correctly, skip to step 12. Otherwise continue with step 3.



Note: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

3. Type the following :

1

and press Enter.

The cursor is at the entry field for client IP Address.

4. Refer to your Network Parameters Worksheet. Type the client IP address and press Enter.

5. Type the following:

2

and press Enter.

The cursor is at the entry field for server IP Address.

6. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

7. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

8. If you are *not* using a gateway, press Enter.
If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.
9. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

10. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

11. For item 5 on this menu, you have two choices:

- If you are using ethernet, select **bnc** or **15 pin d-type**.
- If you are using token ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.



Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

12. When you have finished making entries on this screen, type the following:

0

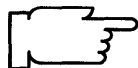
and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

13. Go to the next section, "Destination Root Volume Group."

Destination Root Volume Group

This setting specifies the hard disk or disks where you want BOS to be installed. A volume group is a single hard disk or a group of hard disks. A root volume group, is a group of hard disks that contains boot files so that it can be used to start (boot) the system. It is possible to have more than one root volume group on your system. This procedure describes how to select the root volume group that will be the destination for the new version of BOS that you are installing.



Warning: It is extremely important that you select the correct root volume group since some of the existing data in the destination root volume group will be destroyed during BOS install.

PROCEDURE

1. To select **DESTINATION root VG** from the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following is displayed:

```
CHANGE DESTINATION ROOT VOLUME GROUP

Select the number of the Destination Root Volume Group (RVG).

                                |<-----hard disks in group----->|

ROOT VOLUME GROUP  LOCATION SIZE  LOCATION SIZE  LOCATION SIZE
>>>1. 000000088158089  00-01-00-00 320
   2. 000000077122013  00-01-00-10 320

99 Return to previous menu

Type the number(s) for your selection, then press Enter: 1
```

2. Consult your BOS Installation Plan for the identification number of your destination root volume group. Type the menu number for the destination root volume group and press Enter. For example, to select **ROOT VOLUME GROUP 000000088158089**, as shown in the example screen above, you would type 1 and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Go to the next section, "E. Install the Base Operating System," beginning on the next page.

E. Install the Base Operating System

When you have finished setting all of the values on the Current System Settings menu, you can instruct the system to begin installing the Base Operating System (BOS).

1. To select **Install the AIX Base Operating System with the current settings** at the Current System Settings menu, type the following:

0

and press Enter.

A screen similar to the following displays:

FINAL WARNING

Select the number of the desired action

Base Operating System installation will destroy all data in the root (/) and user (/usr) file systems of the selected root volume group.

99 Return to Previous Menu
0 Continue with Install

Type the number for your selection, then press Enter.

2. To begin installing the system, type the following:

0

and press Enter.

3. In a few seconds, the word `netinstall` displays, followed by a message similar to the following:

```
contacting server.....
```

The network is being configured and the client machine is contacting the installation server and requesting the Network Install File Selection menu.

Note: If the installation server cannot be contacted, a system message displays and the Current System Settings menu appears. Reselect item **2 INPUT Installation Device** and see if your adapter and addresses are set correctly. If these items are correct, contact your network administrator.



4. When the installation server has been contacted, the Network Install File Selection menu displays software available for installation. From this menu, you select the software you want to install. The Network Install File Selection menu is similar to the following:

NETWORK INSTALL FILE SELECTION

1. /inst.images/risc_sys6000/3.2/bos.obj
2. /inst.images/risc_sys6000/3.2/bos.data
3. /inst.images/risc_sys6000/3.2/bosnet
4. /inst.images/risc_sys6000/3.2/bsl.en_US.pc.loc
5. /inst.images/risc_sys6000/3.2/bsm.En_US
6. /inst.images/risc_sys6000/3.2/INed.obj
7. /inst.images/risc_sys6000/3.2/Xrte
8. /inst.images/risc_sys6000/3.2/gnuemacs

77. Previous screen
88. Next screen
99. Return to CHANGE SETTINGS menu
0. Continue with Network Install

Choose the ID# of the file(s) to select or exclude

This menu shows the software that is available from your installation server for installation on your (client) system.

At this point you must select the method for transferring this software from the server to your own (client) system. The software on the server is stored in a compressed format called an *installation image*. Before these images can be expanded and installed by the installation process they must be copied (transferred) from the server to your own system. There are two transfer methods: full transfer and partial transfer.

- Full network transfer – *all* of the software that you want to install is first copied (transferred) from the server to your client's hard disk. The software is then installed using your client's hard disk as the installation device. This is the simpler method, but it uses more disk space since a copy of each installation image must be stored on your own system's hard disk.
- Partial network transfer – only *part* of the software you want to install is copied to your system's hard disk. This software is installed and then you remotely mount your system to the server's file system and do a second install using the directory on your server's hard disk as your installation device. This is a more complex method, but it saves disk space on your client system.

If you have ample disk space, use the full transfer method. If you need to conserve disk space use partial transfer.

- To perform a full network transfer, go to step 5
- To perform a partial network transfer, go to step 6

5. To perform a full network transfer, enter the menu ID numbers for *all* the software you want to install (explanations of the filenames are contained in Chapter 17). Type the numbers on a single line separating each entry with a space.

Select one copy of the Base Operating System (bos.obj), bos.data, bsl, bsmLanguage, and *all* of the optional software you want to install. For example, if you were using the sample menu you might type 1 2 3 4 5 6 7. Note: these may not be the correct numbers for your menu. Get the numbers from the menu on your display – not from the example given here.

When you select an option >>> (arrows) will appear next to the option. You can cancel a selection by re-entering the option's selection number.

Note that the list of selections may continue over several screens. If it does, use the following keys to move forward and backward among screens:

- To move to the next screen, type 88 and press Enter.
- To move to the previous screen, type 77 and press Enter.

When you are done typing the numbers for your selections, go to step 7.

6. To perform a partial network transfer, type just the menu ID numbers for the following options on a single line separating each entry with a space. *Only* select the following software:

(The * in the following names indicates that prefixes and suffixes may appear in the names on your menu.)

/bos.obj The Base Operating System obj and data options.

bos.data

bosnet Network communications software – this contains TCP/IP and NFS.

bsl The Base System Locales software contains information that defines language environment, fonts and keyboard maps for your system. For example, bsl.en_US.pc.loc contains the U.S. English pc code set locale.

bsmLanguage The Base System Messages software, where *Language* is your primary language. This specifies the language that will be used for the system messages. For example, bsmEn_US contains the BOS system messages in English (United States).

Note: If you do *not* select a Base System Locale and Base System Messages option for installation, the system defaults to C POSIX.

For example, in the previous menu these options have the numbers one, two, three, four, and five. Therefore, if your menu looked like the sample menu, you would only type 1 2 3 4 or 5 and press Enter. Note: these may not be the correct numbers for your menu. Get the numbers from the menu on your display – not from the example given here.

When you select an option >>> (arrows) will appear next to the option. You can cancel a selection by re-entering the option's selection number.

Note that the list of selections may continue over several screens. If the menu displays on more than one screen, use the following keys to move forward and backward:

- To move to the next screen, type 88 and press Enter.
- To move to the previous screen, type 77 and press Enter.

When you are done typing the numbers for your selections, go to step 7.

7. Once all selections have been made, you are ready to begin the install process.

During the install process, if they are selected, only the Base Operating System (*bos.obj*), your locale (*bsl*) and the system messages (*bsm*) will be installed on your client hard disk. The rest of the the installation images for the optional software you selected will only be copied to your system's hard disk into the **/usr/sys/inst.images** directory. These optional software selections will *not* be installed at this time, they are only copied and stored in their installation images format. They will be installed later.

To begin the network installation, type 0 and press Enter.

8. As the system begins installing BOS (which will take a while), system messages will be displayed as the following activities occur:

- File systems are created.
- Files are restored.

Note: There are two error messages that may be displayed during BOS installation that you can ignore. The messages state that no software products were found and that no valid products were left to process. These messages are a normal part of the install process and are not indicative of any errors.

9. After the Base Operating System is installed and the selected optional software installation images are copied to your system, a screen similar to the following is displayed:

AIX Base Operating System installation is complete.
Please perform the following three steps to activate the
changes made during this installation.

1. Make sure your installation media (tape, diskette, etc.) has been removed from the input device.
2. Turn the system key to the NORMAL position.
3. Press Enter to restart (reboot) the system.

10. Remove the CD-ROM, tape, or diskette from the drive.



Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

11. Turn the System key to the NORMAL position.
12. Press Enter to shutdown and reboot the system. System messages will appear as the system goes through the shutdown process. As the system reboots, the screen may go blank for a few minutes.

Note: If you are doing a Preservation Installation, the system may do a shutdown and a second boot to complete all of your locale (language environment) changes.

When the system completes the boot (startup) process, a login prompt displays on the console.

13. To log in to the system as root, type the following:

```
root
```

and press Enter.

A system prompt (#) appears.

Note: Although a message may appear on the screen instructing you to read the README files, it is not necessary to read those files at this time.

Your Base Operating System, locale, and system messages (if they were selected) are now installed.

However, any other selected optional software was only transferred, and will be installed in a later procedure.

14. Go to the next section, "F. Set Up the Display Device," beginning on page 4-30.

F. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

1. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.
2. To see what display name is stored in TERM, type the following:
(note that TERM is in capital letters)

```
echo $TERM
```

and press Enter.

The system responds with the name of the type of display the system thinks you are using.

Possible responses to **echo TERM** command:

If TERM = dumb This means that the system was unable to automatically recognize your display. You must manually set the display name. Go to step 3.

If TERM = hft And you *are* using an hft such as a model 5081, 6091, or 8508, then go to the section "H. Read the BOS README File" on page 4-34. If you are not using an hft, go to step 3.

If TERM = a model number Such as `ibm3151` and the number is correct, go to "G. Setting Up an ASCII Terminal" on page 4-32. If the number is wrong, go to step 3.

3. Search the list below and see if your terminal type is in the list.

hft	ibm5550	vt100	wy60-316X
ibm3151	ibm5570	vt220	wyse60-316X
ibm3163		vt320	
ibm3164		vt330	

If your terminal type is in the previous list above, write down the name precisely as it appears in the list and go to step 6.

If your terminal type is not listed above, go to step 4.

4. Install the additional terminal information.
 - a. To install the additional terminal information (contained in **bos.data**), type the following:

```
installp -qaX -d /usr/sys/inst.images bos.data
```

and press Enter.
 - b. After the installation is finished, an installp summary is displayed. If **bos.data** was installed correctly, the `Event` column will show `APPLY` and the `Result` column will show `SUCCESS`.

5. Display names must be typed in a specific format.

- a. To see the terminfo list of the valid display names, type the following:

```
ls /usr/share/lib/terminfo/x
```

(where *x* is the first letter (not capitalized) of the name of the manufacturer or type of your display.

For example, if you have an IBM display, you would type the following:

```
ls /usr/share/lib/terminfo/i,
```

where *i* stands for IBM.)

and press Enter.

- b. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether or not the letters are capitalized. For example, for a model 3151 display, the list will show `ibm3151` as the correct display name.

6. Type the following:

```
export TERM=xxx
```

(where *xxx* is the exact display name that you copied from the terminfo list.

For example, if you are using a 3151, you would type

```
exportTERM=ibm315
```

and then press Enter.

and press Enter.

7. The TERM name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step 6 every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second “/” are the device name. In this example, it is `tty0` (where the last character in this example is a zero, not the letter “o”).

- b. Type the following:

```
chdev -a term=xxx -l zzz
```

(where *xxx* is the display name you used in step 7 and *zzz* is the tty device name you found in step 8a.

Note: The `-l` in this command is a lowercase “L” and that `term` is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0` changed.

Your terminal should now be set correctly. Continue with the next section, “G. Setting Up an ASCII Terminal.”

G. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments).

If you are using an hft such as a model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the section "H. Read the BOS README File" on page 4-34.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE

1. To see what locale (language) is stored in the LANG variable, type the following:
(note that LANG is in capital letters)

```
echo $LANG
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

```
C                (POSIX)
en_GB    or    En_GB    (Great Britain)
en_JP    or    En_JP    (Japan)
en_US    or    En_US    (United States)
```

YES: The system displayed one of the above locales, go to the next section "H. Read the BOS README File" on page 4-34.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo LANG** command a *lower* case letter?

YES: It's a *lower* case letter, go to the next section, "H. Read the BOS README File" on page 4-34.

NO: It's an *upper* case letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the ".in" suffix. Make careful note of whether or not the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see what tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname the tty device. For example, it may display `/dev/tty0`. The character(s) after `/dev/tty` is the number identifying your tty device.

7. To set the input and output map files, type the following:
(where `-l` is a lower case "L," `x` is the number identifying your tty from step 6 and `mapfile` is the name you wrote down from the `termmap` listing in step 5.)

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

(Note that there are no spaces before the "-C"s in this command.)

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section, "H. Read the BOS README File," on page 4-34.

H. Read the BOS README File

A README file is an on-line document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software. It is important that you read the "Installation" section of the BOS README file before you continue. This section will list any changes that you should make to the procedures in the rest of this chapter.

The following procedure contains instructions for viewing the BOS README. As you read the README, write any installation procedure corrections into this manual.

When you are done with the "Installation" section of the README file, return to step 6 in this procedure.

Procedure for viewing BOS README:

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:

(Note: there are no blank spaces in the following command.)

```
/2.Installation
```

and press Enter.

4. The installation notes appear.

To show the next page Press Enter

To show the previous page Type -1 and Press Enter.

Read the notes and write the specified corrections into this manual.

5. When you are finished with the "Installation" section type the following at the colon (:) prompt:

```
q
```

and press Enter.

The system prompt (#) reappears.

6. Are you performing a partial network transfer?

YES: Continue with the next section, "I. Partial Transfer: Preparations for Optional Software Installation."

NO: I am performing a full network transfer. Go to "J. Set Date and Time" on page 4-41.

I. Partial Transfer: Preparations for Optional Software Installation

Installing the Network Facilities

When you installed BOS, the server also transferred the “Network Facilities (BOSNET)” onto your system. This software must now be installed.

To install the Network Facilities, type the following:

```
installp -aqX -d /usr/sys/inst.images bosnet.all
```

and press Enter.

The network facilities are now installed. Continue with the next section titled “Configuring TCP/IP.”

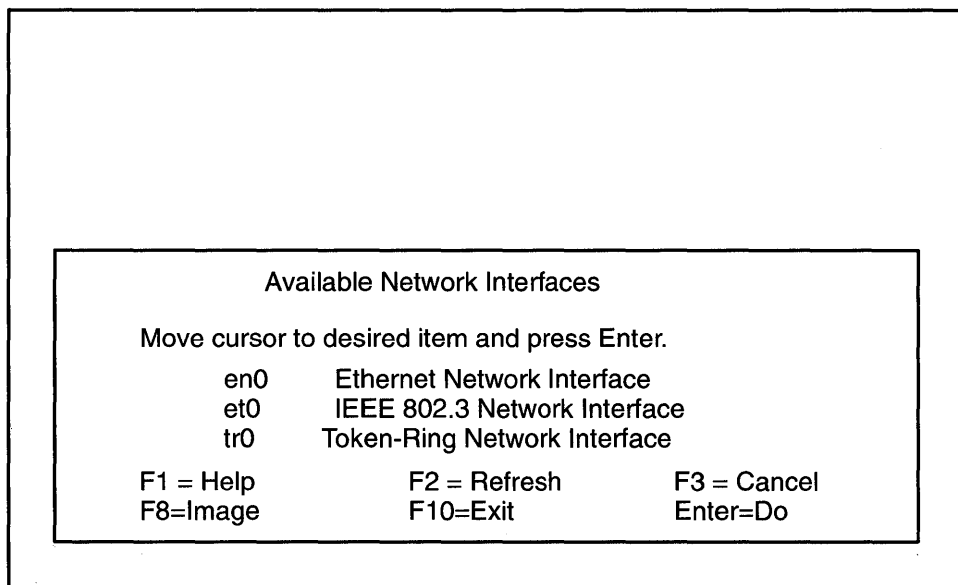
Configuring TCP/IP

1. Complete the TCP/IP worksheet in “Chapter 16. Planning” and return here and continue with the next step.
2. Type the following:

```
smit mktcpip (or smit -C mktcpip if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:



This is a list of the available network interfaces that your system can use for network communications.

Note: The content of this list varies according to what is installed on your system.

3. Move the cursor to highlight the type of interface you are using for network communications and press Enter.

The Minimum Configuration & Startup screen will appear. The exact contents of this screen will depend on the type of network adapter you selected.

For example, if you selected the **Token-Ring Network Interface**, a screen similar to the following is displayed:

Minimum Configuration & Startup

To delete existing configuration data, please use Further Configuration menus.

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]		
* HOSTNAME	[]		
* Internet ADDRESS (dotted decimal)	[]		
* Network MASK (dotted decimal)	[]		
* Network INTERFACE	tr0		
NAMESERVER			
Internet ADDRESS (dotted decimal)	[]		
Domain Name	[]		
Default GATEWAY Address	[]		
(dotted decimal or symbolic name)			
RING Speed	4		
START TCP/IP daemons Now	no		
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

4. Use the following procedures for all versions of the above screen.

Note: Do *not* press Enter until you get to step 10.

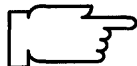
Refer to your TCP/IP worksheet. Type the information from the worksheet to the following fields on the Minimum Configuration & Startup screen:

- HOSTNAME
- Internet ADDRESS
- Network MASK
- NAMESERVER Internet ADDRESS (if you have one)
- Domain Name
- Default GATEWAY Address (if you have one).

Note: Depending on your network configuration, you may not need to complete all of the entries on this screen.

5. Move the cursor to START TCP/IP daemons Now. Press the Tab key to change the default to yes.

6. You have two choices:
 - If you are using an Ethernet Network Interface, continue with step 7.
 - If you are using the Token-Ring Network Interface, skip to step 8.
7. If you need to change the setting for the type of cable you are using, move the cursor to `Your CABLE Type`. Press the Tab key to alternate between `bnc` and `dix`. Skip to step 9.
8. If you need to change the RING speed setting, move the cursor to `RING Speed`. Press the Tab key to alternate between the values `4` and `16`. Continue with step 9.



Warning: If you are using Token-Ring, an incorrect ring speed setting can totally disrupt network communications for all systems on the network.

9. When you have finished making *all* your entries on this screen, confirm that the names and addresses are accurate.
 - If you need to make corrections to your entries, use the Up/Down cursor keys to move to the entry you need to correct and type over the old entry.
 - If your entries are correct, go to step 10.
10. To start the TCP/IP configuration process, press Enter.
11. A `COMMAND STATUS` screen appears. When the `Command: status` indicator changes to `OK`, press F10 to exit SMIT.

TCP/IP is now ready to use. Continue with the next section, "Update the Host List."

Update the Host List

A *nameserver* is a machine on your network that stores the names and addresses of all the network machines. When one machine wants to communicate with another, it sends that machine's name to the nameserver. The nameserver responds with the address of the machine name requested.

If you are using a nameserver for network communications, you do not need to perform this procedure. Go to the section titled "Mounting the NFS Installation Images File System."

If you are *not* using a nameserver for network communications, you must update the hosts list to include the name of your network installation server.

1. To add the hostname of the network installation server, type the following:

```
smit mkhostent (or smit -C mkhostent if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Add a Host Name

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* INTERNET ADDRESS (dotted decimal)	[Entry Fields]
* HOST NAME	[]
ALIAS(ES) (if any – separated by a blank space)	[]
COMMENT (if any – for the host entry)	[]

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

Note: Do *not* press Enter until you get to step 4.

2. INTERNET ADDRESS (dotted decimal) is highlighted.
Type the address of the network installation server.
3. Move the cursor to HOST NAME.
Type the name of the network installation server.
4. To add the host, press Enter.
5. Press F10 to exit SMIT.

Your system now knows the name of the network installation server. Continue with the next section, "Mounting the NFS Installation Images File System."

Mounting the NFS Installation Images File System

1. Type the following:

```
smit mknfs          (or smit -C mknfs if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Start NFS			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
* Start NFS now, on system restart or both	[Entry Fields] [both]		+
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

- To start NFS, press Enter.
- A **COMMAND STATUS** screen appears. When the **Command:** status indicator changes to **OK**, press **F10** to exit SMIT.
- To mount the NFS file system from the server, type the following:

```
smit mknfsmnt (or smit -C mknfsmnt if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Add a File System for Mounting			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
[TOP]	[Entry Fields]		
PATHNAME of mount point	[]	/	
* PATHNAME of remote directory	[]		
* HOST where remote directory resides	[]		
* Mount Type NAME	[]		
Use SECURE mount option?	no		+
* MOUNT now, add entry to /etc/filesystems or both?	now		+
* /etc/filesystems entry will mount the directory	no		+
* on system RESTART.			
MODE for this NFS file system	read-write		+
* ATTEMPT mount in background or foreground	background		+
* NUMBER of times to attempt mount	[]		#
Buffer SIZE for read	[]		#
Buffer SIZE for writes	[]		#
NFS TIMEOUT. In tenths of a second	[]		#
[MORE...19]			
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

Note: Do *not* press Enter until you get to step 9.

5. `PATHNAME` of mount point is highlighted.

Type the following:

```
/usr/sys/inst.images
```

Continue with step 6.

6. Move the cursor to `PATHNAME` of remote directory.
Type the name of the directory that holds the installation images on your network installation server.
7. Move the cursor to `HOST` where remote directory resides.
Type the hostname of your network installation server.
8. Use the default values for the remaining entries.
9. When you have finished making changes on this screen, press Enter.
- 10.A `COMMAND STATUS` screen appears. When the `Command:` changes to `OK`, press `F10` to exit `SMIT`.

You have finished preparing your system for optional software installation. Continue with the next section, "J. Set Date and Time," beginning on the next page.

J. Set the Date and Time

1. At the system prompt (#), type the following:

date

and press Enter.

The system displays the date and time.

Note: Time on your system is expressed in terms of a 24 hour clock, often called “military time.” In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to step 11 on page 4-44.
- To change the date and time, go to step 2.

2. Type the following:

smit startup (or smit -C startup if you are working in AIXwindows)

and press Enter.

A screen similar to the following is displayed:

SYSTEM STARTUP MENU

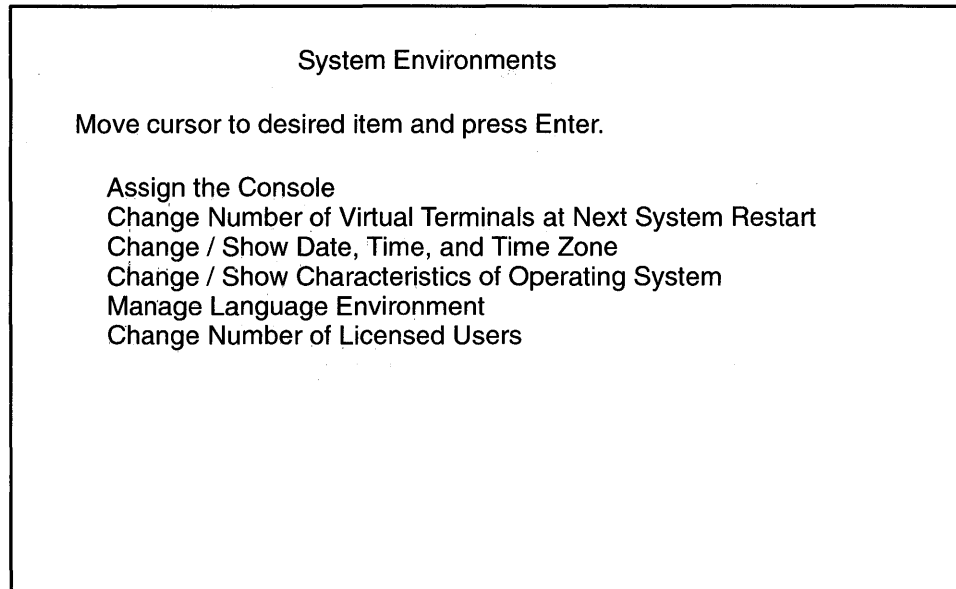
Your Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

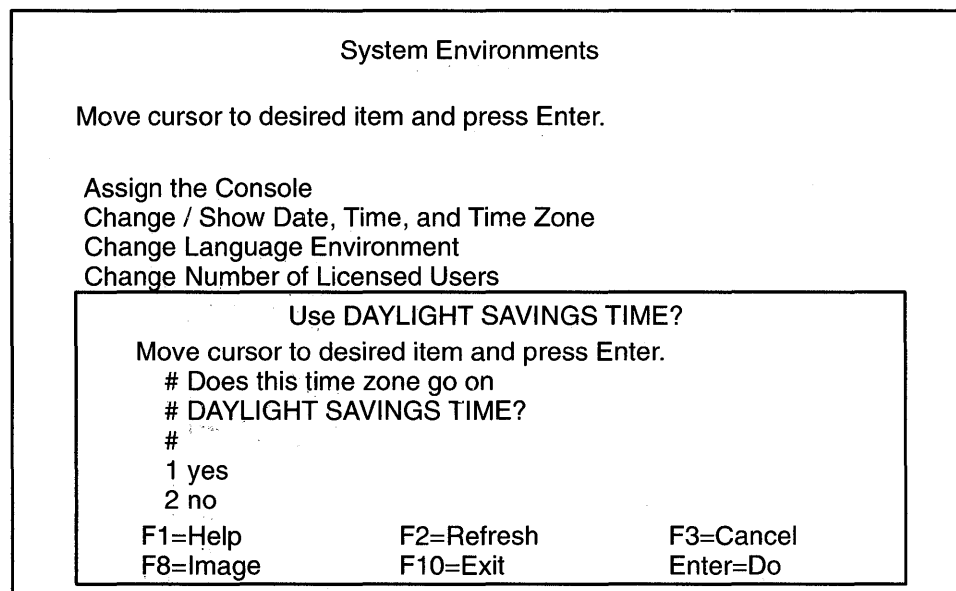
Backup the System
System Environments
Software Products
TCP/IP
NFS

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

3. Select **System Environments** and press Enter. A screen similar to the following is displayed:



4. Select **Change / Show Date, Time, and Time Zone** and press Enter. A screen similar to the following is displayed:



5. You have two choices:

- If your time zone uses daylight savings time, move the cursor to *yes* and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to *no* and press Enter.

A screen similar to the following is displayed:

```
System Environments
Move cursor to desired item and press Enter.
CUT (Coordinated Universal Time) Time Zone
Move cursor to desired item and press Enter.
[TOP]
(CUT0GDT) Coordinated Universal Time (CUT)
(TZ 1DT1) Azores; Cape Verde (CUT -1)
(TZ 2DT2) Falkland Islands (CUT -2)
(TZ 3DT3) Greenland; East Brazil (CUT -3)
(AST4ADT) Central Brazil (CUT -4)
(EST5EDT) Eastern U.S.; Columbia (CUT -5)
(CST6CDT) Central U.S.; Honduras (CUT -6)
[MORE...12]
F1=Help      F2=Refresh   F3=Cancel
F8=Image     F10=Exit    Enter=Do
```

6. Move the cursor to highlight your time zone and press Enter. Use the up and down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following is displayed:

```
Change / Show Date, Time, & Time Zone
Type or select values in entry fields.
Press Enter AFTER making all Desired changes.
[Entry Fields]
Old time zone          CST6CDT
Time Zone              CST6CDT
Does this time zone go on daylight savings time? yes
* YEAR (00-99)        [91]
* MONTH (01-12)      [04]
* DAY (01-31)         [15]
* HOUR (00-23)        [11]
* MINUTES (00-59)    [32]
* SECONDS (00-59)    [05]
F1 = Help      F2 = Refresh   F3 = Cancel   F4 = List
F5 = Undo      F6 = Command   F7=Edit       F8 = Image
F9 =Shell      F10=Exit      Enter=Do
```

7. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following is displayed:

```

                                COMMAND STATUS
Command: OK      stdout: yes      stderr: no

Before completion, additional instructions may appear below

Mon Apr 15 11:32:05 CST 1991

Now exit SMIT and log out and then back in so that any changes to date,
time, and time zone will be reflected in your current session.

F1=Help      F2=Refresh      F3=Cancel      F6=Command
F8=Image     F9=Shell        F10=Exit
```

8. Press F10 to exit SMIT.
 - If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Go to step 9.
 - If you did *not* change the time zone, you have finished setting the date and time. Go to step 11.
9. Use the following procedure to log off the system:
 - At the system prompt, type the following:
`exit`
and press Enter.
 - The login prompt is displayed. Continue with step 10
10. To log back into the system, type the following:
`root`
and press Enter.
11. You have finished setting the date and time. Continue with the next section, "K. BOS Installation Completion Tasks."

K. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION	Go to procedure “Preservation Installation: Restoring the /etc/filesystems File.”
COMPLETE OVERWRITE	Go to procedure “Complete Overwrite Installation: Importing Any Nonroot Volume Groups” on page 4-46.
NEW	Go to “Where Do I Go Next?” on page 4-47.

Preservation Installation: Restoring the /etc/filesystems File

If you are using the “Upgrade Utilities” to restore your configuration, skip this procedure and go to “Restoring Your SNA Configuration” on page 4-47.

If you are *not* using the “Upgrade Utilities,” you need to perform the following procedure.

The preservation installation process saves your old **/etc/filesystems** into a file called **/etc/filesystems.old**. This file contains information on your file system’s mount points and attributes. You must now copy this data back into the **/etc/filesystems** file and create the mount points for all the journaled file systems.

This procedure describes how to restore your **/etc/filesystems** file, create the mount points, and mount the directories.

PROCEDURE

1. Type the following:

```
cd /etc
```

and press Enter.

2. To create the mount points for all journaled file systems known to the system, type the following:

```
lsvg -o | xargs imfs
```

and press Enter.

3. To copy the old file system file, type the following:

```
cp filesystems.old filesystems
```

and press Enter.

4. To list the NFS file systems in the **/etc/filesystems** file, type the following:

```
lsfs -v nfs
```

and press Enter.

5. For *each* directory in the listing, type the following:
(where *MountPoint* is the name of each directory in the Mount Pt column)

```
mkdir -p MountPoint
```

and press Enter.

6. To list the CD-ROM file systems in the **/etc/filesystems** file, type the following:

```
lsfs -v cdrfs
```

and press Enter.

7. For *each* directory in the listing, type the following:
(where *MountPoint* is the name of each directory in the Mount Pt column)

```
mkdir -p MountPoint
```

and press Enter.

8. If you want to mount any journaled file systems now, use the **smit mountfs** command.

You have finished restoring your **/etc/filesystems** file. Go to “Where Do I Go Next?” on page 4-47.

Complete Overwrite Installation: Importing Any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to “Restoring Your SNA Configuration” on page 4-47.

If you have any nonroot volume groups, perform the following procedure.

This procedure is used to make any nonroot volume group hard drives known to your system. If this procedure is not done you will not be able to access your nonroot volume hard drives.

This procedure describes how to import a nonroot volume group and mount the file systems.

PROCEDURE

1. Type the following:

```
smit importvg (or smit -C importvg if you are working in AIXwindows)
```

and press Enter.

2. **VOLUME GROUP** name is highlighted.

Type the name you want to call this volume group.

3. Move the cursor to **PHYSICAL VOLUME** name.

Press F4 to list the available physical volumes.

A list of physical volumes should be displayed.

4. Move the cursor to select the physical volume you want to import.

Press Enter.

5. A Command Status screen appears. When the **Command:** status indicator changes to OK, press F10 to exit SMIT.

6. If you want to mount any journaled file systems now, use the **smit mountfs** command.

You have finished importing your volume groups. Go to the next procedure, “Restoring Your SNA Configuration.”

Restoring Your SNA Configuration

If you are *not* using the Upgrade Utilities to upgrade your system from Version 3.1.x to Version 3.2, go to the next section, “Where Do I Go Next?”

If SNA was *not* already installed on your system when you began to install BOS, go to the next section, “Where Do I Go Next?”

If you are *not* going to install SNA, go to the next section, “Where Do I Go Next?”

The following procedure restores the SNA configuration information you saved using Upgrade Utilities:

PROCEDURE

1. Type the following:

```
cd /
```

and press Enter.

2. Insert the backup image labelled “Configuration File for rsconf” into your tape or diskette drive.

3. To restore the SNA migration file, type the following:
(where *name* is the name of your tape or diskette drive.)

```
restore -xqvf /dev/name ./tmp/.SNA_migration
```

and press Enter.

You have finished restoring your SNA configuration. Continue to the next section, “Where Do I Go Next?”

Where Do I Go Next?

When you selected your software from the Network Install File Selection menu (steps 5 and 6 on page 4-27), did you pick *only* the following three items: Base Operating System (*bos.obj*), Locale (*bsl*), and Messages (*bsm*)?

NO: I picked additional software. Only the three pieces of software listed in the question were actually installed during the network transfer. The rest of the software you selected was only copied from the server into a directory on your system’s hard disk and now resides in that directory in compressed form. To expand and install this software, you must go to “Chapter 6. Optional Software Installation” and use the Preloaded Directory procedures, *not* the Network Installation procedures. You will be installing from the directory on your own hard disk (**/usr/sys/inst.images**). Go now to chapter 6.

YES: I only selected the software listed in the question.
Did you use the partial-transfer method?

YES: Go to “Chapter 6. Optional Software Installation” and use the Network Installation Server procedures to install the rest of your software.

NO: If you do not need to install any more software, go to “Chapter 8. Post-Installation Procedures.”

Related Information

The following is a list of titles you may want to read in InfoExplorer or your printed manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **backup** command, **pax** command, **sysck** command, **restore** command, and **ls** command.

The Backup Overview in *General Concepts and Procedures* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *General Concepts and Procedures* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The file systems Overview in *General Concepts and Procedures* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *General Concepts and Procedures* provides information on mounting files and directories, mount points, and automatic mounts.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000*.

Using SMIT in *Getting Started: Managing the IBM RISC System/6000*.

IBM RISC System/6000 Problem Solving Guide.

ADVANCED PATH: BOS Installation from Network

A. Complete the BOS Installation Plan

Go to "Chapter 16. Planning" and complete the BOS Installation Plan.

B. Start the System

1. Make sure your system is OFF.
2. Turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, tape drives, monitors, and external disk drives.
4. Turn the system unit power switch to the ON position.
5. After several minutes, the 200 code will appear on the three-digit LED display.
6. Insert the BOS CD-ROM, first BOS tape, or the BOS boot diskette.
7. Turn the system key to the SERVICE position.
8. Press the yellow system Reset button twice in quick succession.
9. If you are installing from CD-ROM or tape, go to step 12.
10. When c07 appears on the three-digit LED display, insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
11. When c07 appears the second time, insert the BOS Display diskette.
12. When c31 appears on the three-digit LED display, select the device that you want to use as your console.
13. If you are installing from diskettes, insert the BOS Install/Maint diskette.
14. At the 3.2 INSTALLATION AND MAINTENANCE screen, select item 1.
15. What type of installation are you performing?
 - PRESERVATION
 - At the METHODS OF INSTALL screen, enter 1.
 - Go to section "D. Preservation: Change the Current System Settings."
 - COMPLETE OVERWRITE
 - At the METHODS OF INSTALL screen, enter 2.
 - Go to section "C. New or Complete Overwrite: Change the Current System Settings."
 - NEW
 - Go to section "C. New or Complete Overwrite: Change the Current System Settings."

C. New or Complete Overwrite: Change the Current System Settings

1. To change the LOCALE (Language), enter 1 and choose the correct LOCALE (Language).
2. To change the INPUT Installation Device, enter 2 and choose the correct installation device.
3. To change the DESTINATION Disks, enter 3 and choose your destination disks.
4. To change the STARTUP (Boot) Disk, enter 4 and choose your startup disk.

D. Preservation: Change the Current System Settings

1. To change the LOCALE (Language), enter `1` and choose the correct installation device.
2. To change the INPUT Installation Device, enter `2` and choose the correct installation device.
3. To change the DESTINATION root VG, enter `3` and choose the destination root VG.

E. Start the Installation Process

1. From the Current System Settings screen, enter `0` to begin the installation.
2. From the FINAL WARNING screen, enter `0` to start the installation.
3. Choose the bos.obj from the "Network Install File Selection" menu.
4. Enter `0` to continue the installation.
5. When the reboot screen appears, do the following:
 - Remove the CD-ROM, tape, or diskette from the drive.
 - Turn the System key to the NORMAL position.
 - Press Enter to reboot the system.
6. After the system reboots, log in to the system as root.

F. Set Up the Display Device

1. If you are using an HFT, skip below to section "H. Read the BOS README File."
2. Enter `export TERM=xxx` where `xxx` is your display name.
3. Enter `chdev -a term=xxx -l zzz` where `xxx` is your display name and `zzz` is the tty device you are using.

G. Setting Up an ASCII Terminal

If you are using a non-English Locale (Language), do the following:

- Enter `ls /etc/nls/termmap` to list the available input and output map files.
- Enter `setmaps -t mapfile` where `mapfile` is from the termmap listing.
- Enter `chdev -l ttyx -a imap=mapfile -a omap=mapfile` where `x` is the tty device you are using and `mapfile` is from this termmap listing.

H. Read the BOS README File

1. Enter `pg /usr/lpp/bos/README` to read the "Installation" chapter of the BOS README file.
2. If you are performing a full network installation, skip to "J. Set the Date and Time."

I. Partial Transfer: Preparations for Optional Software Installation

1. Execute the `smit mktcpip` command to configure TCP/IP.
2. If you are not using a nameserver, execute the `smit mkhostent` command.
3. Execute the `smit mknfs` command to configure NFS.
4. Execute the `smit mknfsmnt` command and mount the server's installation image directory on the client's `/usr/sys/inst.images` directory.

J. Set the Date and Time

1. Enter `date` to check the system date.
2. If the date is not correct, execute the `smit chtz` command to change the date.

K. BOS Installation Completion Procedures

What type of installation are you performing?

PRESERVATION:	Go to procedure "Preservation Installation: Restoring the /etc/filesystems File."
COMPLETE OVERWRITE:	Go to procedure "Complete Overwrite Installation: Importing Any Nonroot Volume Groups."
NEW:	Go to section "Where Do I Go Next?"

Preservation Installation: Restoring the /etc/filesystems File

If you are using the "Upgrade Utilities" to restore your configuration, skip this procedure and go to "Restoring Your SNA Configuration."

1. Enter `lsvg -o | xargs imfs` to create the mount points for all journaled file systems known to the system.
2. Enter `cp /etc/filesystems.old /etc/filesystems` at the system prompt.
3. Enter `lsfs -v nfs` to list the NFS file systems in the `/etc/filesystems` file.
4. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
5. Enter `lsfs -v cdrfs` to list the CD-ROM file systems in the `/etc/filesystems` file.
6. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
7. Execute `smit mountfs` to mount any journaled file systems.
8. Go to the last section, "Where Do I Go Next?" on the next page.

Complete Overwrite Installation: Importing any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to "Restoring Your SNA Configuration."

1. Execute the `smit importvg` command to import and vary on any nonroot volume groups.
2. Execute the `smit mountfs` command to mount any journaled file systems.
3. Go to the next section, "Restoring Your SNA Configuration"

Restoring Your SNA Configuration

If you are *not* using the "Upgrade Utilities," go to the next section "Where Do I Go Next?"

If SNA was *not* already installed on your system when you began to install BOS, go to the next section "Where Do I Go Next?"

If you are *not* going to install SNA, go to the next section "Where Do I Go Next?"

1. Enter `cd /` at the system prompt.
2. Insert the backup image labeled "Configuration File for rsconf" in the tape or diskette drive.

3. Enter `restore -xqvf /dev/name ./tmp/.SNA_migration` where *name* is the name of your tape or diskette drive.

Where Do I Go Next?

If you are installing optional software, go to “Chapter 6. Optional Software Installation.”

If you do not need to install optional software, go to “Chapter 8. Post-Installation Procedures.”

Chapter 5. BOS Installation for Use with a /usr Server

This chapter describes how to install a portion of the Version 3.2 Base Operating System on a system, and configure that system to remotely access the **/usr** file system. The **/usr** file system contains common executable software that is sharable across the same architecture. When you use this procedure to install a system, only the **/** (root) file system and the information necessary to start (boot) the system are installed. The **/usr** file system is not installed. Instead, the system you are installing is configured to access the **/usr** file system remotely from a network server.

The chapter explains three different methods for installing BOS: New Installation, Preservation Installation, and Complete Overwrite Installation. The instructions are combined in one chapter because the procedures for the three types of installation are very similar. The differences in the procedures will be pointed out where they occur.

A *volume group* is one disk or a group of hard disks on your system. A *root volume group* (RVG) is a group of hard disks in which the root portion of BOS is stored. This means that a root volume group can be used to boot (start up) your system. It is possible to have multiple root volume groups on a system, but only one is necessary.

1. *New Installation* is performed when the hard disk or disks you are installing BOS onto are *empty*. A hard disk is empty if it does not contain any data or if it contains some data, but it does not contain a root volume group (it is not bootable).
2. *Preservation Installation* installs the Version 3.2 Base Operating System (BOS) and preserves the existing root volume group on your system. This method only overwrites the temporary (**/tmp**), **/var**, and root (**/**) file systems of the previously installed version. Use this installation procedure when a previous version of BOS is installed on your system, and you want to preserve the root volume group, including your system configuration.

A Preservation Installation will automatically preserve only some of the data on your system (the contents of the root volume group). It will still be necessary for you to use the Upgrade Utilities or the System Management Interface Tool (SMIT) to preserve and restore all of your system data.

3. *Complete Overwrite Installation* is used when a previous version of BOS is installed on your system, and you want to completely overwrite the existing version of BOS. This procedure may impair recovery of data or destroy all existing data on your hard drives.

Use Complete Overwrite when:

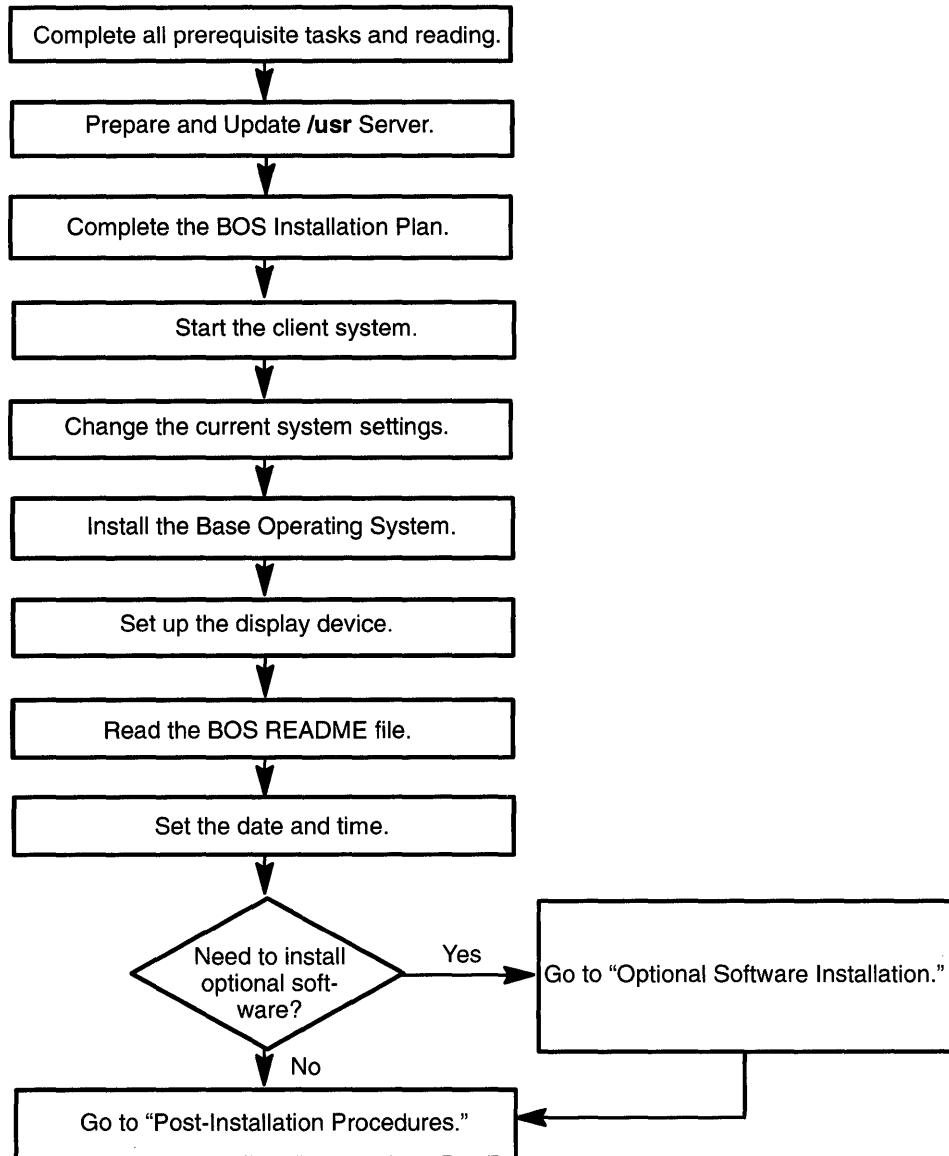
- You want to install onto disks that contain an existing root volume group, but you want to completely overwrite the root volume group (RVG).
For example, this might occur if your root volume group has become corrupted.
- You want to reassign your hard disks.
For example, you have four hard disks and they all belong to one root volume group and you want to separate the disks into two volume groups. First do a Complete Overwrite Installation and select the first two disks as the installation destination. These two disks become the root volume group. You then use SMIT to combine the remaining two disks into a second (nonroot) volume group (VG). The result is two separate volume groups. All of the operating system files are in the root volume group and you can store user data in the second volume group. When the operating system in the first root volume group (RVG) is updated or reinstalled, the user's data in the second volume group (VG) is unaffected.



Warning: The Complete Overwrite procedure overwrites the selected destination disks. This means that after the installation is complete, you will have to manually configure your system using 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 Preservation Installation procedure described in this chapter.

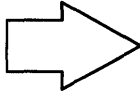
Flowchart for BOS Installation for Use With a /usr Server

This flowchart outlines the basic steps you must perform to install the Version 3.2 Base Operating System for use with a **/usr** server.

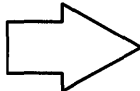
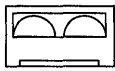


Prerequisite Tasks or Conditions

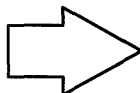
1. All hardware is installed, including any devices such as external tape drives.
2. You should be familiar with the procedures for operating your hardware. If you are not familiar with your hardware, read "Chapter 18. Hardware Basics."
3. In this chapter you will be using the System Management Interface Tool (SMIT) to install optional software. If you are not familiar with SMIT, read "Chapter 19. SMIT Basics," then return here and continue with step 4.
4. Locate the key for the key lock on your system unit.
5. Locate your installation media.



Do the following only if you are installing from CD-ROM:
Find the CD-ROM labelled Version 3.2.



Do the following only if you are installing from tapes:
Find the tape(s) labelled Version 3.2



Do the following only if you are installing from diskettes:
Find the following diskettes:

BOS Boot, Display, Install/Maintenance, and, if appropriate,
BOS Display Extensions diskettes.

If you are using a non-IBM display adapter card, be sure that
you have the display diskette from that manufacturer.

Note: If you are not sure whether or not you have a display
adapter installed, consult the "About Your Machine" document
that was shipped with your system. It contains a list of the
factory hardware shipped with your system.

6. If you are doing a new installation, skip to the next section, “Procedural Overview.”

If you are doing a Preservation Installation or a Complete Overwrite Installation, and the system you are installing is not already using a `/usr` server, it is recommended that you locate or create a backup of your system before you begin the installation. Go to “Chapter 15. Backing Up Your System” and then return here and continue with the next section, “Procedural Overview.”

Procedural Overview

This chapter contains instructions for the following procedures:

- A . Preparing and Updating the **/usr** Server
- B . Complete the BOS Installation Plan
- C . Start the Client System
- D . New or Complete Overwrite: Change the Current System Settings
- E . Preservation: Change the Current System Settings
- F . Start the Installation Process
- G . Set up the Display Device
- H . Setting Up an ASCII Terminal
- I . Read the BOS README file
- J . Set the Date and Time
- K . BOS Installation Completion Tasks.
- L . Change the Way a Client Accesses a Remote **/usr** Server.

If you have not already installed the Version 3.2 on your remote **/usr** client, go to the section "A. Preparing and Updating the /usr Server" on page 5-7.

If you have already installed the Version 3.2 on your remote **/usr** client and you want to change the way your client accesses a remote **/usr** server, go to the section "L. Change the Way a Client Accesses a Remote /usr Server" on page 5-54.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin on the next page. This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of the Base Operating System and only need a minimal set of instructions, you can skip to page 5-58 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin in the next section.

A. Preparing and Updating the /usr Server

This section describes how to prepare and update a **/usr** server from an installed system.

Before you can install a client system to use **/usr** remotely, a **/usr** server must be prepared. This section contains the procedures for preparing and updating a **/usr** server.

Prerequisite Tasks or Conditions

1. Server software and hardware is installed including:
 - Version 3.2 BOS.
 - TCP/IP and NFS software. If this software is not yet installed, refer to "Chapter 6. Optional Software Installation." If this software is not yet configured, refer to "Chapter 14. Network Configuration."
 - An Ethernet or Token-Ring network adapter.
2. Server unit is ON and the key switch is set to the NORMAL position.

Making the /usr File System Remotely Available

If you have already exported **/usr**, you can skip to the next section, "Updating the Host List."

- If you have *not* created a **/usr** server, you must create one now.

This procedure describes how to make the **/usr** file system on the **/usr** server available to other systems on the network.

PROCEDURE

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit mknfsexp (or smit -C mknfsexp if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Add a Directory to Exports List			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
		[Entry Fields]	
* PATHNAME of directory to export	[]	/	
* MODE to export directory	read-write		+
HOSTNAME list. If exported read-mostly	[]		
Anonymous UID	[-2]		
HOSTS allowed root access	[]		
HOSTS & NETGROUPS allowed client access	[]		
Use SECURE option?	no		+
* EXPORT directory now, system restart or both	both		+
PATHNAME of Exports file if using HA-NFS	[]		
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

3. PATHNAME of directory to export is highlighted. Type the following but do *not* press Enter until you get to step 5:

```
/usr
```

4. Move the cursor to MODE to export directory. Press the Tab key to change the default to read-only.
5. Press Enter. A COMMAND STATUS screen appears.

Note: If the message appears saying that an export for /usr already exists, it means that /usr has been previously exported. Continue with the next step.

6. When the command finishes running, press F10 to exit SMIT.

You have finished creating a /usr server. Continue with the next section, "Updating the Host List."

Updating the Host List

If you are using a nameserver for network communications, you do not need to perform this procedure. Instead, have your network administrator update the nameserver and go to the section titled "Updating the Server's Client Access List" on page 5-9.

If you are *not* using a nameserver for network communications, follow the steps below to update the server's hosts list to include the names of the clients you now want to add to this server.

PROCEDURE

1. To add the hostname of the client, type the following:

```
smit mkhostent (or smit -C mkhostent if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Add a Host Name

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]
* INTERNET ADDRESS (dotted decimal)	[]
* HOST NAME	[]
ALIAS(ES) (if any – separated by a blank space)	[]
COMMENT (if any – for the host entry)	[]

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

Note: Do *not* press Enter until you have finished making changes on this screen. Use the cursor to move to the next field.

2. INTERNET ADDRESS (dotted decimal) is highlighted. Type the address of the client.
3. Move the cursor to HOST NAME. Type the name of the client.
4. To add the host, press Enter.
5. Press F10 to exit SMIT.

The Server now knows the name of the client. Continue with the next section titled "Updating the Server's Client Access List."

Updating the Server's Client Access List

This procedure describes how to give clients access to the `/usr` file system on the `/usr` server.

PROCEDURE

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit chnfsexp (or smit -C chnfsexp if you are working in AIXwindows)
and press Enter.
```

A screen similar to the following is displayed:

Change/Show Attributes of an Exported Directory

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[Entry Fields]

* PATHNAME of exported directory [] +

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

3. Type the following:

```
/usr
```

and press Enter.

A screen similar to the following is displayed:

Change/Show Attributes of an Exported Directory			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
		[Entry Fields]	
* PATHNAME of exported directory		[/usr]	
* MODE to export directory		read-only	+
* HOSTNAME list. If exported read-mostly		[]	
Anonymous UID		[-2]	
HOSTS allowed root access		[]	
HOSTS & NETGROUPS allowed client access		[]	
Use SECURE option?		no	+
* EXPORT directory now, system restart or both		both	+
PATHNAME of Exports file if using HA-NFS		[]	
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

4. Move the cursor to `HOSTS allowed root access`. Type (separated by commas) the hostname of each client that will need root user access to the `/usr` file system (do not press Enter). For example, if you have three clients that need access as root and they are named `walter`, `esther`, and `britt`, you would type `walter, esther, britt`.
5. Move the cursor to `HOSTS & NETGROUPS allowed client access`. If there are entries already in this field, use the right arrow key to move the cursor to the end of the list. Type the hostname (separated by commas) of each client that will need to access the `/usr` file system.
6. Press Enter. A Command Status screen appears. When the `Command:` status indicator changes to `OK`, press F10 to exit SMIT.

7. Type the following:

```
smit rnmfs          (or smit -C rnmfs if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Stop NFS			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
		[Entry Fields]	
* Stop NFS now, on system restart or both	now		+
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

8. Press Enter. A Command Status screen appears. When the `Command:` status indicator changes to `OK`, press F10 to exit SMIT.

9. Type the following:

```
smit mknfs      (or smit -C mknfs if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Start NFS			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
		[Entry Fields]	
* Start NFS now, on system restart or both	both		+
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

10. Press Enter. A Command Status screen appears. When the `Command:` status indicator changes to `OK`, press F10 to exit SMIT.

You have finished updating the `/usr` server's client access list. Continue with the next section, "B. Complete the BOS Installation Plan."

/usr SERVER

B. Complete the BOS Installation Plan

Go to "Chapter 16. Planning" and complete the BOS Installation Plan. Then, return here and continue with the next section, "C. Start the Client System."

C. Start the Client System

Perform the following procedure on your *client* system, not your installation server.

1. If your client system is turned OFF, go to step 2. If your client system is ON, use the following procedures to shutdown the system.
 - a. If you are not already logged in as root on your client system, log in as root now.
 - b. Type the following:

```
shutdown
```

and press Enter.



Note: The shutdown process is complete when the following message is displayed:
`Halt completed ...` on your display screen.

- c. When the shutdown process is complete, turn off your system unit.

Continue with step 2.

2. Turn the system key on your client system to the SECURE position.
3. Turn on all attached external devices, such as terminals, tape drives, monitors, and external disk drives.

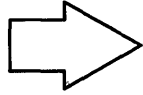


Note: If you are using an ASCII terminal, make sure that the terminal's line speed (baud rate) = 9600, word length (bits per character) = 8, parity = no (none), and number of stop bits = 1.

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 the attributes. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set the attributes.

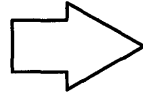
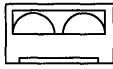
4. Turn the client system unit power switch to the ON position.
5. After several minutes, the 200 code will appear on the three-digit LED display on the client system unit.

6. Do one of the following:



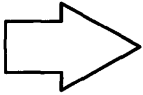
Insert the Version 3.2 CD-ROM into a disc caddy and insert the caddy into your CD-ROM drive.

Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it.



Insert the Version 3.2 tape into your tape drive.

Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

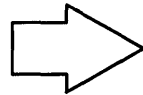


Insert the Version 3.2 BOS Boot diskette into the diskette drive.

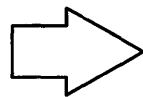
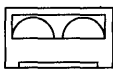
7. Turn the system key on your client system to the SERVICE position.

8. Press the yellow system Reset button twice in quick succession.

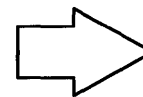
9. Your client system will begin booting (starting). A series of codes will immediately appear on the system unit three-digit LED display.



If you are installing from CD-ROM, go to step 12.



If you are booting from tape, go to step 12.



If your system has one of the following display adapters installed, go to step 10. Otherwise, go to step 11.

Note: If you ordered a adapter with your system, the adapter name will be listed on your "About Your Machine" document as one of the following:

- POWER Gt3 Midrange graphics adapter
- POWER Gt4 Midrange graphics adapter
- POWER Gt4x Midrange graphics adapter
- High Speed 3D Graphics Accelerator
- Any other graphics adapter

If your system does *not* have one of the above adapters installed, go to step 11.

10. When c07 appears on the three-digit LED display, continue with step a.

- a. Remove the diskette from the diskette drive and insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
Note: When c07 appears the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step b.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

- b. When c07 appears the second time, remove the diskette in the drive and insert the BOS Display diskette.

Continue with step 12.

11. When the c07 code appears on your three-digit LED system display, remove the diskette in the drive and insert the BOS Display diskette into the diskette drive.

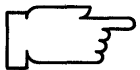
Note: When c07 appears the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step 12.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

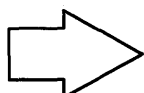
12. The screen may stay blank for several minutes. Then, c31 will appear on the three-digit LED display. Each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.



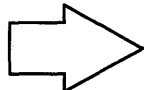
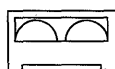
Note: During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right shift key.

Console refers to the keyboard and display device. The system is asking which console you want to use as the system console. The system console is the one you will use for your system administration tasks.

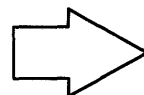
Press the specified keys only on the console that you want to use as your system console.



Go to step 14.



Go to step 14.



Go to step 13.

13. A message similar to the following is displayed:

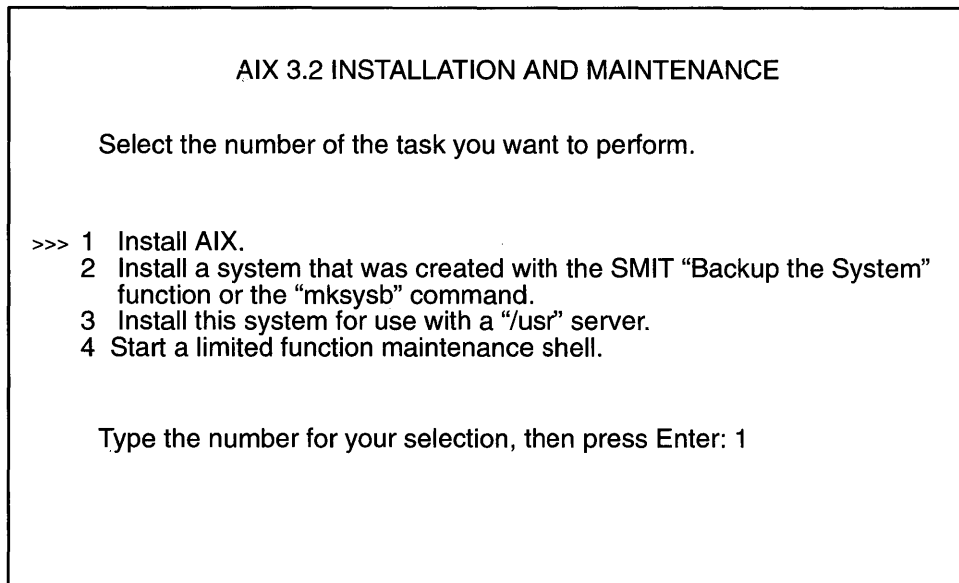
Insert BOS Install/Maint Diskette and Press Enter.

When you see this message, remove the Display diskette, insert the BOS Install/Maint diskette, and press Enter.

14. A series of messages is displayed. This may take several minutes.

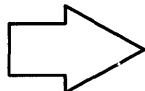
Note: If you are booting from tape, it is normal for the system to move the tape back and forth during this period.

A screen similar to the following is displayed:

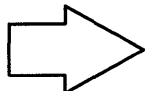
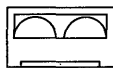


Note: The >>> (arrows) on this menu indicate the default selection.

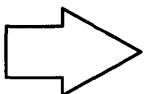
During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right shift key.



Continue with step 15.



Continue with step 15.



Remove the BOS Install/Maint diskette from the diskette drive. Then continue with step 15.

15. To select 3. Install this system for use with a /usr server, type the following:

3

and press Enter.

16. If you are doing a Preservation Installation or a Complete Overwrite Installation, continue with step 17.

If you are doing a New Installation, go to section "D. New or Complete Overwrite: Change the Current System Settings" on page 5-17.

17. If you are doing a Preservation or Complete Overwrite Installation, a screen similar to the following is displayed:

```
METHOD OF INSTALL

Select the number of the type of installation you want to perform

>>> 1 PRESERVATION INSTALL
      Preserves SOME of the data on the destination hard disk.
      Only overwrites the usr (/usr), temporary (/tmp), and root (/)
      file systems of the previously installed version of the AIX.

      2 COMPLETE OVERWRITE INSTALL
      May overwrite EVERYTHING on the destination hard disk.
      - If the destination disk is totally empty, select 2.
      - If AIX is already installed on the destination hard disk
        but there is nothing on the disk that you want to
        preserve, select 2.

      99 Return to previous menu

Type the number for your selection, then press Enter : 1
```

18. Select the method of install that you want to use by typing the appropriate number and then press Enter. The Current System Settings screen will then appear.

If you are doing a Preservation Install go to "E. Preservation: Change the Current System Settings" on page 5-27.

If you are doing a Complete Overwrite Install, go to "D. New or Complete Overwrite: Change the Current System Settings" on page 5-17.

D. New or Complete Overwrite: Change the Current System Settings



Note: Do *not* select 0 on the following Current Systems Settings screen until after you have read all of the instructions in section D.

A screen similar to the following is displayed:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the AIX base operating system. If these settings are correct type "0" and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter

	CURRENT CHOICE
1 LOCALE (language)	C (POSIX)
2 INPUT Installation Device	150 mb Tape: /dev/rmt0
3 DESTINATION Disks	00-01-00-00
4 STARTUP (Boot) Device	00-01-00-00
99 Return to previous menu	
0 Install the AIX base operating system with the current settings	

Type the number for your selection, then press Enter : 0



Warning: When updating from Version 3.1.x to 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings.

Continue with the next section, "Locale (Language)."

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure.

If you do not need to change the locale, go to the next section entitled "Input Installation Device" on page 5-19.

PROCEDURE

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following is displayed:

```
CHANGE LOCALE
Select the number for the language/locale.

>>> 1 C (POSIX)                16 Italian
      2 Danish                  17 Japanese
      3 Dutch (Belgium)         18 Norwegian
      4 Dutch                   19 Portuguese
      5 English (Great Britain) 20 Spanish
      6 English (United States) 21 Swedish
      7 Finnish                 22 Turkish
      8 French (Belgium)
      9 French (Canada)
     10 French (France)
     11 French (Switzerland)
     12 German (Switzerland)
     13 German
     14 Greek
     15 Icelandic

     99 Return to previous menu
Type the number for your selection then press ENTER: 1
```

2. Type the number for the primary language environment (locale) for your system and press Enter. For example, to use English (United States), type 6 and press Enter.

Note: Changes to LOCALE do not take effect until after BOS and your primary language software are 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 is the same code set that you were using in Version 3.1.x. After software installation is completed, users that want to change their language environment or code set should consult the InfoExplorer articles "Understanding Locale," "How to Change Your Locale," and "Understanding Code Set Strategy."

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Continue with the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.



Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device, continue with the following procedure.

PROCEDURE

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following is displayed:

```
CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will
be the source of the software you are going to install.

      DEVICE TYPE          PATHNAME    LOCATION CODE
1  Diskette:              /dev/fd0    00-00-0D-00
2  8mm Tape:              /dev/rmt0   00-08-00-30
>>> 3  CDROM:              /dev/cd0    00-08-00-40
4  Token-Ring:            /dev/tr0    00-00
5  Token-Ring:            /dev/tr1    00-01
6  Standard Ethernet:     /dev/en0    00-02
7  IEEE 802.3 Ethernet    /dev/et0    00-02
8  Standard Ethernet     /dev/en1    00-03
9  IEEE 802.3 Ethernet    /dev/et1    00-03

      99 Return to previous menu

Type the number for your selection then press ENTER: 3
```

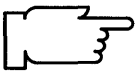
2. If you are installing BOS from a network installation server, skip to step 5. If you are using another type of device, continue with step 3.
3. Type the number for the device supplying the software you want to install and press Enter.
4. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Skip to the next section, "Destination Disk," beginning on page 5-22.

5. Type the number for the network device supplying the software you want to install and press Enter.

The exact appearance of the next screen will vary according to the type of network device you are using. The following example shows the screen that appears if you select a Standard Ethernet network interface. However, use the procedures that follow for all versions of this screen.

ENTER NETWORK PARAMETERS		
Enter the network parameters that will allow this machine to access the network install server over the en0 network interface.		
1	Client address: (Network address of this machine.)	11.11.11.11
2	Server address: (Network address of the network install server.)	11.111.111.111
3	Gateway address: (Optional, required if network is on a subnet.)	
4	Subnet mask: (Optional, required if network is on a subnet.)	444.444.444.444
5	Ethernet connection type: (bnc or 15 pin d-type)	15 pin d-type
99	Return to previous menu	
0	Commit current network settings and return to Settings Menu	
Type the number for your selection, then press "Enter": 0		

If all of the information on the screen is already set correctly, skip to step 15. Otherwise continue with step 6.



CAUTION: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

6. Type the following :

1

and press Enter

The cursor is at the entry field for client IP Address. This is the address of the machine you are installing BOS on.

7. Refer to your Network Parameters Worksheet. Type the client IP address and press Enter.

8. Type the following:

2

and press Enter.

The cursor is at the entry field for server IP Address. This is the address of the installation server.

Note: This does not have to be the same machine as the machine that will act as your **/usr** server. You can install from one server and have a different machine act as your source for **/usr**. The portion of BOS you install from the installation server must, however, be the same version of BOS that is on your **/usr** server. You will specify the address of your **/usr** server later using option 5 on the Current Systems Settings screen.

9. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

10. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

11. If you are *not* using a gateway, press Enter.

If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.

12. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

13. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

14. For item 5 on this menu, you have two choices:

- If you are using ethernet, select **bnc** or **15 pin d-type**.
- If you are using token ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.



Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

15. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

16. Go to the next section, "Destination Disk," on page 5-22.

Destination Disk

This section describes how to select the hard disk or disks where the portion of the base operating system (BOS) will be installed. The location codes to the right of "Destination Disks" identify the hard disks. Consult your BOS Installation Plan for the location of your destination disks.



Warning: It is extremely important that you install to the correct destination. If your destination disks are not empty, then all of the existing data on the destination disks will be destroyed during BOS installation.

If you need to change the destination disk or disks, continue with the following procedure. If you do not need to change the destination disk, go to the next section called "Startup (Boot) Disk."

PROCEDURE

1. To select **DESTINATION Disks** at the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following is displayed:

```
CHANGE DESTINATION HARD DISK(S)

Select the Destination Hard Disks. At least one bootable disk must be selected.
If necessary, more than one hard disk may be selected. To cancel a selection,
enter the number a second time. Current selection is indicated by >>>.

      LOCATION  SIZE (MB)  VOLUME GROUP ID  BOOTABLE DISK
*>>>1  00-07-00-00  320          00014099342d572c  Yes
*>>>2  00-07-00-10  320          00014099342d572c  No

99  Return to previous menu
0   Commit current selection and return to Settings Menu

Type the number for your selection, then press Enter : 0
```

Note: The exact appearance of this screen will vary according to the configuration of your system.

In this example, the system has two hard drives, each of which is 320 megabytes in size. The fact that the disks have volume group ID numbers indicates that they are not empty. Together they make up the volume group identified by the number 00014099342d572c. Since there is a *Yes* in the Bootable column for one of the disks, this means that they make up a BOS root volume group that can be used to boot (start) the system.

2. Type the number for the hard disks to which you want to install your software and press Enter. You can select multiple disks.
3. When you have finished selecting disks, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Go to the next section, "Startup (Boot) Disk."

Startup (Boot) Disk

This section describes how to select the hard disk within the group of destination disks that will contain the startup (boot) image. This is the hard disk that will be used to start your system after BOS is successfully installed and you reboot the system.

PROCEDURE

1. To select **STARTUP (Boot) Disk** at the Current System Settings menu, type the following:

4

and press Enter.

A screen similar to the following is displayed:

CHANGE STARTUP DISK

Choose the ID# of the startup (boot) disk.

STARTUP DISK
>>> 1 00-01-00-00

99 Return to previous menu

Type the number for your selection, then press ENTER: 0

2. Type the number for the disk on which you want your startup (boot) image to reside, and press Enter.

3. When you have finished, type the following:

0

and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

4. Go to the next section, "Network Interface to /usr Server."

NETWORK Interface to /usr Server

This menu option specifies the network interface that you will be using to communicate with your **/usr** server. The submenu under this option is used to enter the network addresses for your client system and the **/usr** server.

Note: Even if the interface already appears to be correctly chosen, it is recommended that you reselect the interface and look at the network address settings to make sure they are correct.

1. At the Current System Settings menu, select **NETWORK Interface to /usr Server**. Type the following:

5

and press Enter.

A screen similar to the following is displayed:

```
CHANGE THE /usr SERVER NETWORK DEVICE

Select the network device that will be used to access the remote
/usr server.

      DEVICE TYPE      PATHNAME      LOCATION CODE
1 Token-Ring:         /dev/tr0      00-00
2 Token-Ring:         /dev/tr1      00-01
3 Standard Ethernet:  /dev/en0      00-02
>>> 4 IEEE 802.3 Ethernet /dev/et0      00-02
5 Standard Ethernet  /dev/en1      00-03
6 IEEE 802.3 Ethernet /dev/et1      00-03

99 Return to previous menu

Type the number for your selection then press ENTER: 4
```



- The system displays a list of available network adapters. The list will vary according to the equipment installed on your system.

Note: Only network interfaces with logical names that end in zero, one, two or three can be used as the interface to your **/usr** server.

Type the number for the network interface that you will use to contact your **/usr** server and press Enter.

A screen similar to the following is displayed:

ENTER NETWORK PARAMETERS

Enter the network parameters that will allow this machine to access the **/usr** filesystem over the en0 network device.

- 1 Client address:
(network address of this machine)
- 2 Server address:
(network address of the **/usr** filesystem server)
- 3 Gateway address:
(Optional, required if gateway used)
- 4 Subnet mask:
(Optional, required if network is on a subnet:
- 5 Ethernet connection type:
(bnc or 15 pin d-type)

- 99 Return to Previous Menu
- 0 Continue with Installation

Type the number for your selection, then press Enter: 1

Note: The above screen is the standard Ethernet version of this menu, if you are using a different type of interface there will be variations in the appearance of the screen. However, use the following procedure for all versions of this screen.

If all of the information on the screen is already set correctly, skip to step 12. Otherwise continue with step 3.



CAUTION: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, you would type 22.20.11.10 as the network address.

- Type the following:

1

and press Enter.

The cursor is at the entry field for client IP Address. *Client* means the machine on which you are installing a portion of BOS.

- Refer to your **/usr** Server Parameters Worksheet. Type the client IP address and press Enter.

5. Type the following:

2

and press Enter.

The cursor is at the entry field for server IP Address. *Server* means the **/usr** server. This may, or may not, be the same machine as your installation server (if you are using one).



CAUTION: Make sure the server address is entered correctly. An incorrect address will prevent your system from booting correctly.

6. Refer to your /Usr Server Parameters Worksheet. Type the **/usr** server IP address and press Enter.

7. Type the following:

3

and press Enter.

The cursor is at the entry field for the gateway address.

8. If you are *not* using a gateway, press enter.

If you are using a gateway, refer to your /Usr Server Parameters Worksheet. Type the gateway address and press Enter.

9. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

10. Refer to your /Usr Server Parameters Worksheet. Type the subnet mask and press Enter.

11. For the last entry on this menu, you have two choices:

- If you are using Ethernet, select **bnc** or **15 pin d-type**.
- If you are using Token-Ring, select **4 megabits** or **16 megabits** ring data rate.

Type the following:

5

The entry in this field changes to the alternate entry each time you type 5 and press Enter.

Press Enter until the selection you need is displayed.



Warning: If you are using a Token-Ring, make sure you have selected the correct data rate. An incorrect data rate can cause the total disruption of your network.

12. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

13. Go to the section, "F. Start the Installation Process," beginning on page 5-36.

E. Preservation: Change the Current System Settings



Note: Do *not* select 0 on the following Current Systems Settings screen until after you have read all of the instructions in section E.

A screen similar to the following is displayed:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of a minimum system. If these settings are correct type 0 and then press Enter to begin the installation. To change a setting, type the number of the setting and then press Enter

	CURRENT CHOICE
1 LOCALE (language)	C (POSIX)
2 INPUT Installation Device	150 mb Tape: /dev/rmt0
3 DESTINATION Root VG	00-01-00-00
4 NETWORK Interface to /usr Server	Network: en0

99 Return to previous menu
0 Install a minimum system with the current settings

Type the number for your selection, then press Enter : 0



Warning: When updating from Version 3.1.x to 3.2, be sure to check the current system settings because the default settings may be incorrect.

The Current System Settings screen lists the settings that will be used for performing the installation. The following sections explain the settings that are displayed on this screen. Read each section carefully and follow the section procedures if you need to change the settings. Continue with the next section, “Locale (Language).”

Locale (Language)

This section describes how to change the primary locale (language environment) that will be used to display screen information. The locale determines which language environment (the language for messages and the way to display numeric, monetary, and time characters), HFT keyboard mapping, and HFT fonts will be used when your system boots. If the operating system has never been installed, the default is C (POSIX). C (POSIX) is the locale (language environment) that conforms to the POSIX standards.

To change the locale, continue with the following procedure.

If you do not need to change the locale, go to the next section entitled “Input Installation Device” on page 5-29.

PROCEDURE

1. To select **LOCALE** from the Current System Settings menu, type the following:

1

and press Enter.

A screen similar to the following is displayed:

```

                                CHANGE LOCALE
                                Select the number for the language/locale.

>>>  1  C (POSIX)                16  Italian
      2  Danish                   17  Japanese
      3  Dutch (Belgium)          18  Norwegian
      4  Dutch                    19  Portuguese
      5  English (Great Britain)  20  Spanish
      6  English (United States)  21  Swedish
      7  Finnish                  22  Turkish
      8  French (Belgium)
      9  French (Canada)
     10  French (France)
     11  French (Switzerland)
     12  German (Switzerland)
     13  German
     14  Greek
     15  Icelandic

     99  Return to previous menu

Type the number for your selection then press ENTER: 1
```

2. Type the number for the primary language environment (locale) for your system and press Enter.
For example, to use English (United States), type 6 and press Enter.

Note: Changes to LOCALE do not take effect until after BOS and your primary language software are 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 is the same code set that you were using in Version 3.1.x. After software installation is completed, users that want to change their language environment or code set should consult the InfoExplorer articles "Understanding Locale," "How to Change Your Locale," and "Understanding Code Set Strategy."

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

Continue with the next section, "Input Installation Device."

Input Installation Device

The *input installation device* is the device that will supply the software that you want to install. Your options are CD-ROM, tape, diskette, or a network server. The *default input installation device* is the device from which you booted, unless the previous installation was performed from a network device, in which case the default input installation device will be the network device.



Note: Booting from diskette and installing from CD-ROM is not supported. This explains why the CD-ROM drive is not listed on the Change Input Installation Device menu if you booted the system from diskette.

If you need to change the input installation device continue with the following procedure.

PROCEDURE

1. To select **INPUT Installation Device** from the Current System Settings menu, type the following:

2

and press Enter.

A screen similar to the following is displayed:

```
CHANGE INPUT INSTALLATION DEVICE

Select the number of the Input Installation Device. This will
be the source of the software you are going to install.

    DEVICE TYPE      PATHNAME      LOCATION CODE
  >>> 1 Diskette:      /dev/fd0      00-00-0D-00
      2 8mm Tape:    /dev/rmt0     00-08-00-30
      3 CDROM:       /dev/cd0      00-08-00-40
      4 Token-Ring:  /dev/tr0      00-00
      5 Token-Ring:  /dev/tr1      00-01
      6 Standard Ethernet: /dev/en0     00-02
      7 IEEE 802.3 Ethernet /dev/et0     00-02:
      8 Standard Ethernet /dev/en1     00-03:
      9 IEEE 802.3 Ethernet /dev/et1     00-03:

      99 Return to previous menu

Type the number for your selection then press ENTER: 2
```

2. If you are installing BOS from a network installation server, skip to step 5. If you are using another type of device, continue with step 3.
3. Type the number for the device supplying the software you want to install and press Enter.
4. The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column. Skip to the next section, "Destination Root Volume Group," on page 5-32.

5. Type the number for the network device supplying the software you want to install and press Enter.

The exact appearance of the next screen will vary according to the type of network device you are using. The following example shows the screen that appears if you select a Standard Ethernet network interface. However, use the procedures that follow for all versions of this screen.

ENTER NETWORK PARAMETERS		
Enter the network parameters that will allow this machine to access the network install server over the en0 network interface.		
1	Client address: (Network address of this machine.)	11.11.11.11
2	Server address: (Network address of the network install server.)	11.111.111.111
3	Gateway address: (Optional, required if network is on a subnet.)	
4	Subnet mask: (Optional, required if network is on a subnet.)	444.444.444.444
5	Ethernet connection type: (bnc or 15 pin d-type)	15 pin d-type
99	Return to previous menu	
0	Commit current network settings and return to Settings Menu	
Type the number for your selection, then press "Enter": 0		

If all of the information on the screen is already set correctly, skip to step 15. Otherwise continue with step 6.



CAUTION: Do *not* type leading zeros in any of the network address triplets. For example, do *not* type 022.020.011.10. Instead, type 22.20.11.10 as the network address.

6. Type the following:

1

and press Enter.

The cursor is at the entry field for client IP Address. This is the address of the machine you are installing BOS on.

7. Refer to your Network Parameters Worksheet. Type the client IP address and press Enter.

8. Type the following:

2

and press Enter.

The cursor is at the entry field for server IP Address. This is the address of the installation server.

Note: This does not have to be the same machine as the machine that will act as your **/usr** server. You can install from one server and have a different machine act as your source for **/usr**. The portion of BOS you install from the installation server must, however, be the same version of BOS that is on your **/usr** server. You will specify the address of your **/usr** server later using option 5 on the Current Systems Settings screen.

9. Refer to your Network Parameters Worksheet. Type the server IP address and press Enter.

10. Type the following:

3

and press Enter.

The cursor is at the entry field for Gateway IP Address.

11. If you are *not* using a gateway, press Enter.

If you are using a gateway, type the IP address for the system that is serving as a gateway and press Enter.

12. Type the following:

4

and press Enter.

The cursor is at the entry field for subnet mask.

13. Refer to your Network Parameters Worksheet. Type the subnet mask and press Enter.

14. For item 5 on this menu, you have two choices:

- If you are using ethernet, select **bnc** or **15 pin d-type**.
- If you are using token ring, select **4 megabits** or **16 megabits** ring data rate.

If you need to change the value of item 5, type the following:

5

and press Enter until the selection you need is displayed. The entry in this field changes to the alternate value each time you type 5 and press Enter.



Warning: If you are using Token-Ring, make sure you have selected the correct data rate. Selecting an incorrect data rate can result in total network disruption.

15. When you have finished making entries on this screen, type the following:

0

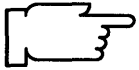
and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

16. Go to the next section, "Destination Root Volume Group" on page 5-32.

Destination Root Volume Group

This setting specifies the hard disk or disks where you want BOS to be installed. A volume group is a single hard disk or a group of hard disks. A "root" volume group, is a group of hard disks that contains boot files so that it can be used to start (boot) the system. It is possible to have more than one root volume group on your system. This procedure describes how to select the root volume group that will be the destination for the new version of BOS that you are installing.



Warning: It is extremely important that you select the correct root volume group since some of the existing data in the destination root volume group will be destroyed during BOS installation.

1. To select **DESTINATION root VG** from the Current System Settings menu, type the following:

3

and press Enter.

A screen similar to the following is displayed:

```
CHANGE DESTINATION ROOT VOLUME GROUP
Select the number of the Destination Root Volume Group (RVG).

                                     |<-----hard disks in group----->|

ROOT VOLUME GROUP  LOCATION  SIZE  LOCATION  SIZE  LOCATION  SIZE
>>> 1. 000000088158089  00-08-00-00 320
      2. 000000077122013  00-08-00-10 670

99 Return to previous menu

Type the number(s) for your selection, then press ENTER: 1
```

Note: In this example there are two root volume groups (RVG) already installed on this system. The first is RVG number 88158089 which is on the 320 megabyte disk located at the address 00-01-00-00. The second RVG is number 77122013 which is on the 670 megabyte disk located at the address 00-01-00-10.

2. Consult your BOS Installation Plan for the identification number of your destination root volume group. Type the menu number for the destination root volume group and press Enter. For example, to select **ROOT VOLUME GROUP 00000088158089**, as shown in the example screen above, you would type **1** and press Enter.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

3. Go to the next section, "Network Interface to /usr Server."

NETWORK Interface to /usr Server

This menu option specifies the network interface that you will be using to communicate with your **/usr** server. The submenu under this option is used to enter the network addresses for your client system and the **/usr** server.

Note: Even if the interface already appears to be correctly chosen, it is recommended that you reselect the interface and look at the network address settings to make sure they are correct.

1. At the Current System Settings menu, select **NETWORK Interface to /usr Server**. Type the following:

5

and press Enter.

A screen similar to the following is displayed:

CHANGE THE /usr SERVER NETWORK DEVICE

Select the network device that will be used to access the remote /usr server.

	DEVICE TYPE	PATHNAME	LOCATION CODE
	1 Token-Ring:	/dev/tr0	00-00
	2 Token-Ring:	/dev/tr1	00-01
	3 Standard Ethernet:	/dev/en0	00-02
>>>	4 IEEE 802.3 Ethernet	/dev/et0	00-02
	5 Standard Ethernet	/dev/en1	00-03
	6 IEEE 802.3 Ethernet	/dev/et1	00-03

99 Return to previous menu

Type the number for your selection then press ENTER: 4

- The system displays a list of available network interface. The list will vary according to the equipment installed on your system.
Type the number for the network Interface that you will use to contact your **/usr** server and press Enter.

A screen similar to the following is displayed:



Note: Only network interfaces with logical names that end in zero, one, two, three, or four can be used as the interface to your **/usr** server.

ENTER NETWORK PARAMETERS

Enter the network parameters that will allow this machine to access the **/usr** filesystem over the **en0** network device.

- 1 Client address:
(network address of this machine)
- 2 Server address:
(network address of the **/usr** filesystem server)
- 3 Gateway address:
(Optional, required if gateway used)
- 4 Subnet mask:
(Optional, required if network is on a subnet:
- 5 Ethernet connection type:
(bnc or 15 pin d-type)
- 99 Return to Previous Menu
- 0 Continue with Installation

Type the number for your selection, then press Enter: 1

Note: The above screen is the standard Ethernet version of this menu, if you are using a different type of adapter there will be variations in the appearance of the screen. However, use the following procedure for all versions of this screen.

If all of the information on the screen is already set correctly, skip to step 12. Otherwise continue with step 3.



CAUTION: Do *not* type leading zeros in any of the network address triplets. For example, do not type **022.020.011.10**. Instead, you would type **22.20.11.10** as the network address.

- Type the following:

1

and press Enter.

The cursor is at the entry field for client IP Address. *Client* means the machine on which you are installing a portion of BOS.

- Refer to your **/Usr Server Parameters Worksheet**. Type the client IP address and press Enter.

5. Type the following:

2

and press Enter.

The cursor is at the entry field for server IP Address. *Server* means the **/usr** server. This may, or may not, be the same machine as your installation server (if you are using one).



CAUTION: Make sure the server address is entered correctly. An incorrect address will prevent your system from booting correctly.

6. Refer to your /Usr Server Parameters Worksheet. Type the **/usr** server IP address and press Enter.

7. Type the following:

3

and press Enter.

The cursor is at the entry field for the gateway address.

8. If you are *not* using a gateway, press enter.

If you are using a gateway, refer to your /Usr Server Parameters Worksheet. Type the gateway address and press Enter.

9. Type the following:

4

and press Enter.

The cursor is at the entry field for the subnet mask.

10. Refer to your /Usr Server Parameters Worksheet. Type the subnet mask and press Enter.

11. For the last entry on this menu, you have two choices:

- If you are using Ethernet, select **bnc** or **15 pin d-type**.
- If you are using Token-Ring, select **4 megabits** or **16 megabits** ring data rate.

Type the following:

5

The entry in this field changes to the alternate entry each time you type 5 and press Enter.

Press Enter until the selection you need is displayed.



Warning: If you are using a Token-Ring, make sure you have selected the correct data rate. An incorrect data rate can cause the total disruption of your network.

12. When you have finished making entries on this screen, type the following:

0

and press Enter to continue with the installation.

The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.

13. Go to the next section, "F. Start the Installation Process," beginning on page 5-36.

F. Start the Installation Process

When you have finished setting all of the values on the Current System Settings menu, you can instruct the system to begin installing the root (/) and boot (start up) portions of the Base Operating System (BOS).

1. To select **Install the Base Operating System with the current settings** at the Current System Settings menu, type the following:

0

and press Enter.

The exact appearance of the following warning screen will vary according to the type of install you are doing. Use the procedure that follows for all versions of this screen. A screen similar to the following is displayed:

FINAL WARNING

Select the number of the desired action

If your destination disks contain any data, then installing this system for use with a /usr server will destroy or impair recovery of all data on the selected disks

99 Return to Previous Menu
0 Continue with Install

Type the number for your selection, then press ENTER

2. To begin installing the system, type the following:

0

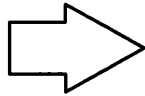
and press Enter.

If within a few seconds you see a `Device is not ready` message, go to step 3. If this message does *not* occur, go to step 4.

3. You probably selected the wrong input device. If this error occurs, you *must* return to step 6 in section "C. Start the System" on page 5-12 and repeat the installation procedure. This time, make sure you select the correct input device.

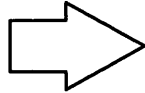
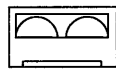
4. Do one of the following:

Note: If you are using a network input device, make sure and follow the instructions next to the network icon from this point on.

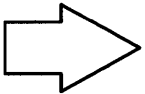


If you booted from CD-ROM and are installing from CD-ROM, go to step 10.

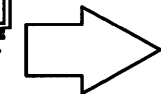
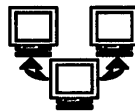
If you booted from CD-ROM and are installing from network device, go to step 6.



Go to step 10.



Go to step 5.



Go to step 6.

5. A message similar to the following will appear:

```
Please insert the first BOS diskette
and press Enter to continue ...
```

Note: Make sure that the BOS Boot diskette has the same version number as your BOS diskettes. Insert the first BOS diskette and press Enter. Continue with step 10.

6. In a few seconds, the following messages are displayed:

```
netinstall
contacting server.....
```

Your client machine is contacting the installation server and requesting the Network Install File Selection menu.

Note: If the installation server cannot be contacted, a system message displays and the Current System Settings menu reappears. Reselect item **2 INPUT Installation Device** and see if your adapter and addresses are set correctly. If these items are correct, contact your network administrator.



7. When the installation server has been contacted, the Network Install File Selection menu will appear. From this menu, you select the software you want to install. The exact appearance of this menu will vary according to the software that has been loaded on the server.

A screen similar to the following will appear:

NETWORK INSTALL FILE SELECTION

1. /inst.images/risc_sys6000/3.2/X11rte
2. /inst.images/risc_sys6000/3.2/bos.obj
3. /inst.images/risc_sys6000/3.2/bosnet
4. /inst.images/risc_sys6000/3.2/bssiEn_US

77. Previous screen
88. Next screen
99. Return to CHANGE SETTINGS menu
0. Continue with Network Install

Choose the ID# of the file(s) to select or exclude

8. Type the ID number for the menu item with the name */bos.obj* (where the "*" may be prefixes or suffixes) and then press Enter.

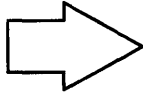
9. To begin the installation, type the following:

0

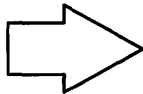
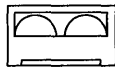
and press Enter.

10. As the system begins installing the / (root) and boot portions of BOS, system messages will be displayed as the following activities occur:

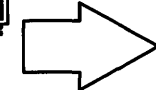
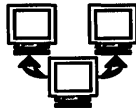
- File systems are created.
- Files are restored.



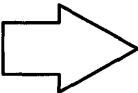
Note: When the screen shown on the next page appears (this will take a while) continue with step 11.



Note: When the screen shown on the next page appears (this will take a while) continue with step 11.



Note: When the screen shown on the next page appears (this will take a while) continue with step 11.



Note: As the installation process continues, a message similar to the following may display when it is time to insert another diskette:

```
pax: Ready for volume 2.  
pax: Type "go" when ready to proceed (or  
"quit" to abort):
```

a. Insert the next diskette, type the following:

```
go
```

and press Enter.

Continue inserting diskettes when prompted.

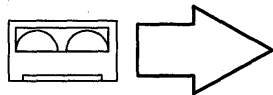
b. When the following screen appears (this will take a while), go to step 11.

Note: There are two error messages that may be displayed during BOS installation that you can ignore. The messages state that no software products were found and that no valid products were left to process. These messages are a normal part of the install process and are not indicative of any errors.

AIX Base Operating System installation is complete.
Please perform the following three steps to activate the changes made during this installation.

1. Make sure your installation media (tape, diskette, etc.) has been removed from the input device.
2. Turn the system key to the NORMAL position.
3. Press Enter to restart (reboot) the system.

11. Remove the CD-ROM, tape, or diskette from the drive.



Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

12. Turn the System key to the NORMAL position.

13. Press Enter to shutdown and reboot the system. System messages will appear as the system goes through the shutdown process. As the system reboots, the screen may go blank for a few minutes.

Note: The system will now do a shutdown and a second boot to automatically install the root portions of the optional software products. If the server later installs more optional software, each /usr client must also install the root portion using the procedures outlined in Chapter 6, section "C. Installing Optional Software on a Remote /usr Client."

When the system completes the boot (startup) process, a login prompt displays on the console.

14. To log in to the system as root, type the following:

```
root
```

and press Enter.

A system prompt (#) appears.

Your Base Operating System is now installed.

Note: Although a message may appear on the screen instructing you to read the README files, it is not necessary to read those files at this time.

15. To verify that the **/usr** file system is mounted through NFS from the remote **/usr** server, type the following:

```
mount | grep /usr
```

and press Enter.

The system should display a line similar to the following for the **/usr** file system:

```
197.2.47.47 /usr /mnt nfs Dec 18 11:47 ro,fg,hard,intr,retry=3
```

16. If the entry for the fourth column is `nfs`, go to step 17.

If the entry for the fourth column is `jfs`, the remote **/usr** mount did not succeed. A minimal **/usr** file system, which was installed during the installation process, is mounted for maintenance and trouble shooting purposes. This local **/usr** file system contains a subset of the commands normally found in the **/usr** file system, and is intended for maintenance and emergency use only; but, it can not be updated with the **installp** command.

If the remote **/usr** file system is not mounted, go to “Chapter 21. Recovery Procedures,” section “Recovering from a Remote **/usr** Mount Failure” for instructions to diagnose and correct the situation; then return here and continue with step 17.

17. Go to the next section, “G. Set Up the Display Device.”

G. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the TERM variable. You now need to check the TERM variable to see if it is correctly set.

1. Determine the model number for your display.
If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.
2. To see what display name is stored in TERM, type the following:
(note that TERM is in capital letters)

```
echo $TERM
```

and press Enter.

The system responds with the name of the type of display the system thinks you are using.

Possible responses to **echo TERM** command:

If TERM = dumb	The system was unable to automatically recognize your display. You must manually set the display name. Go to step 3.
If TERM = hft	And you are using an hft such as IBM models 5081, 6091, or 8508, then go to the section "I. Read the BOS README File" on page 5-46. If you are not using an hft, go to step 3.
If TERM = a model number	Such as <code>ibm3151</code> and the number is correct, go to "H. Setting Up an ASCII Terminal" on page 5-44. If the number is wrong, go to step 3.

3. Use the following procedures to manually set the TERM name.
 - a. If you are using a VT100 terminal, then your TERM name is "vt100" skip to step 3d. If you are not using a VT100, continue with step b.
 - b. Display names must be typed in a specific format. To see the terminfo list of the valid display names, type the following:

```
ls /usr/share/lib/terminfo/x
```

(where *x* is the first letter (not capitalized) of the name of the manufacturer or type of your display.

For example, if you have an IBM display, you would type:

```
ls/usr/share/lib/terminfo/i  
where i stands for IBM.)
```

and press Enter.

- c. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether or not the letters are capitalized. For example, for a model 3151 display, the list will show `ibm3151` as the correct display name.

- d. Type the following:
(where `xxx` is the exact display name that you copied from the terminfo list)

```
export TERM=xxx
```

and press Enter.

For example, if you are using a 3151, you would type `export TERM=ibm3151` and then press Enter.

4. The TERM name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step 3d. Every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second “/” are the device name. In this example it is `tty0` (note that the last character in this example is a zero, not the letter “o”).

- b. Type the following:

```
chdev -a term=xxx -l zzz
```

(where `xxx` is the display name you used in step 3d and `zzz` is the tty device name you found in step 4a.

Note: The “-l” in this command is a lowercase “L” and `term` is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0` changed.

Your terminal should now be set correctly. Continue with the next section, “H. Setting Up an ASCII Terminal.”

H. Setting Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language environments.)

If you are using an hft such as a model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the section "I. Read the BOS README File" on page 5-46.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE

1. To see what locale (language) is stored in the LANG variable, type the following:

```
echo $LANG    (note that LANG is in capital letters)
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

```
C                (POSIX)
en_GB   or   En_GB (Great Britain)
en_JP   or   En_JP (Japan)
en_US   or   En_US (United States)
```

YES: The system displayed one of the above locales, go to the next section "D. Set the Date and Time" on page 5-46.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo LANG** command a *lower* case letter?

YES: It's a *lower* case letter, go to the next section, "D. Set the Date and Time" on page 5-46.

NO: It's an *upper* case letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the `.in` suffix. Make careful note on whether or not the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is "ibm3161-C.in." The corresponding output map file is "ibm3161-C.out." You would write down "ibm3161-C" for this example.

6. To see what tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname the tty device. For example, it may display `/dev/tty0`. The characters after `/dev/tty` are the numbers identifying your tty device.

7. To set the input and output map files, type the following:

(where `-l` is a lower case "L", `x` is the number identifying your tty from step 6 and `mapfile` is the name you wrote down from the `termmap` listing in step 5.)

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:

- a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with non-English locales. Continue with the next section, "I. Read the BOS README File."

I. Read the BOS README File

A README file is an on-line document that was installed onto your hard disk when BOS was installed. This file contains late-breaking information about changes or problems in the software. It is important that you read the "Installation" section of the BOS README file before you continue. This section will list any changes that you should make to the procedures in the rest of this chapter.

The following procedure contains instructions for viewing the BOS README. As you read the README, write any installation procedure corrections into this manual.

When you are done with the "Installation" section of the README file return to page 5-46. and continue with the next section of this manual called "J. Set the Date and Time."

Procedure for viewing BOS README:

1. At the system prompt (#), type the following:

```
pg /usr/lpp/bos/README
```

and press Enter.

2. When the copyright screen appears, press Enter again.

3. At the colon (:) prompt, type the following:

Note: There are no blank spaces in the following command.

```
/2.Installation
```

and press Enter.

4. The installation notes appear.

To show the next page Press Enter

To show the previous page Type -1 and press Enter.

Read the notes and write the specified corrections into this manual.

5. When you are finished with the "Installation" section, type the following at the colon (:) prompt:

```
q
```

and press Enter. The system prompt (#) reappears.

6. Continue with the next section of this manual, "J. Set the Date and Time."

J. Set the Date and Time

1. At the system prompt (#), type the following:

date

and press Enter.

The system displays the date and time.



Note: Time on your system is expressed in terms of a 24-hour clock, often called “military time.” In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to step 11 on page 5-50.
- To change the date and time, go to step 2.

2. Type the following:

```
smit startup      (or smit -C startup if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

SYSTEM STARTUP MENU

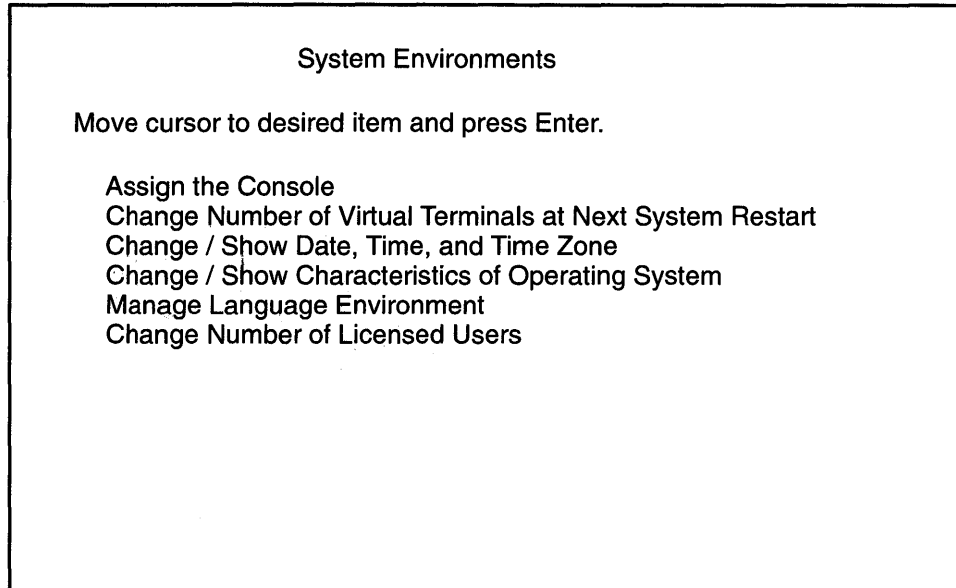
Your Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

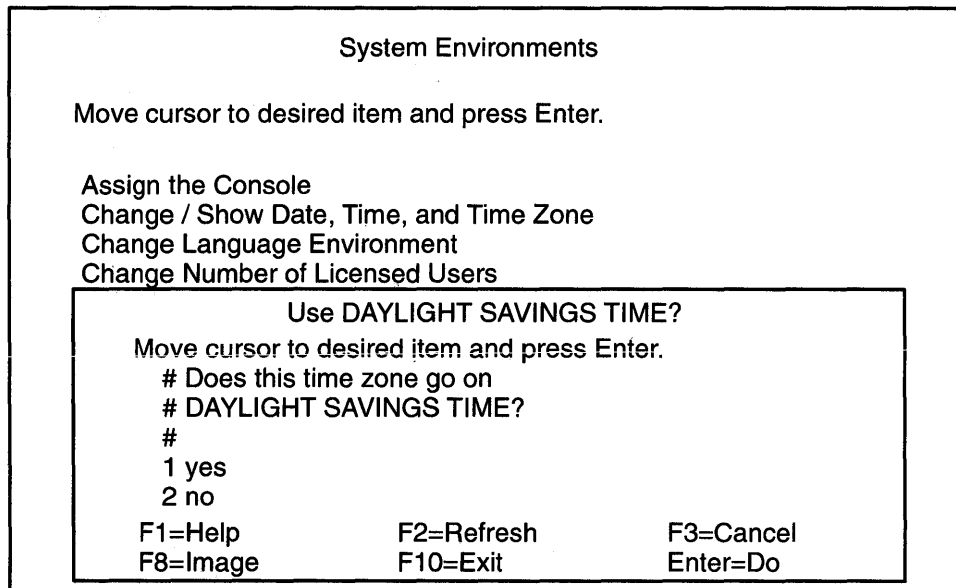
Backup the System
System Environments
Software Products
TCP/IP
NFS

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

3. Select **System Environments** and press Enter. A screen similar to the following is displayed:



4. Select **Change / Show Date, Time, and Time Zone** and press Enter. A screen similar to the following is displayed:



5. You have two choices:

- If your time zone uses daylight savings time, move the cursor to *yes* and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to *no* and press Enter.

A screen similar to the following is displayed:

```
System Environments
Move cursor to desired item and press Enter.
CUT (Coordinated Universal Time) Time Zone
Move cursor to desired item and press Enter.
[TOP]
(CUT0GDT) Coordinated Universal Time (CUT)
(TZ 1DT1) Azores; Cape Verde (CUT -1)
(TZ 2DT2) Falkland Islands (CUT -2)
(TZ 3DT3) Greenland; East Brazil (CUT -3)
(AST4ADT) Central Brazil (CUT -4)
(EST5EDT) Eastern U.S.; Columbia (CUT -5)
(CST6CDT) Central U.S.; Honduras (CUT -6)
[MORE...12]
F1=Help      F2=Refresh   F3=Cancel
F8=Image     F10=Exit    Enter=Do
```

6. Move the cursor to highlight your time zone and press Enter. Use the up and down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following is displayed:

```
Change / Show Date, Time, & Time Zone
Type or select values in entry fields.
Press Enter AFTER making all Desired changes.
Old time zone [Entry Fields] CST6CDT
Time Zone CST6CDT
Does this time zone go on daylight savings time? yes
* YEAR (00-99) [91]
* MONTH (01-12) [04]
* DAY (01-31) [15]
* HOUR (00-23) [11]
* MINUTES (00-59) [32]
* SECONDS (00-59) [05]
F1 = Help      F2 = Refresh   F3 = Cancel   F4 = List
F5 = Undo     F6 = Command  F7=Edit      F8 = Image
F9 =Shell     F10=Exit     Enter=Do
```

7. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following is displayed:

```

                                COMMAND STATUS
Command: OK      stdout: yes      stderr: no

Before completion, additional instructions may appear below

Mon Apr 15 11:32:05 CST 1991

Now exit SMIT and log out and then back in so that any changes to date,
time, and time zone will be reflected in your current session.

F1=Help      F2=Refresh      F3=Cancel      F6=Command
F8=Image     F9=Shell       F10=Exit
```

8. Press F10 to exit SMIT.
 - If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Go to step 9.
 - If you did *not* change the time zone, you have finished setting the date and time. Go to step 11.
9. Use the following procedure to log off the system:

At the system prompt, type the following:

```
exit
```

and press Enter.

The login prompt is displayed. Continue with step 10.
10. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting the date and time. Continue with step 11.
11. You have finished setting the date and time. Continue with the next section, "K. BOS Installation Completion Tasks."

K. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION	Go to procedure “Preservation Installation: Restoring the /etc/filesystems File.”
COMPLETE OVERWRITE	Go to procedure “Complete Overwrite Installation: Importing Any Nonroot Volume Groups” on page 5-52.
NEW	Go to “Where Do I Go Next?” on page 5-53.

Preservation Installation: Restoring the /etc/filesystems File

If you are using the “Upgrade Utilities” to restore your configuration, skip this procedure and go to “Where Do I Go Next?” on page 5-53.

If you are *not* using the “Upgrade Utilities,” you need to perform the following procedure.

The preservation installation process saves your old **/etc/filesystems** into a file called **/etc/filesystems.old**. This file contains information on your file system’s mount points and attributes. You must now copy this data back into the **/etc/filesystems** file and create the mount points for all the journaled file systems.

This procedure describes how to restore your **/etc/filesystems** file, create the mount points, and mount the directories.

PROCEDURE

1. Type the following:

```
cd /etc
```

and press Enter.

2. To create the mount points for all journaled file systems known to the system, type the following:

```
lsvg -o | xargs imfs
```

and press Enter.

3. To save the current filesystems file, type the following:

```
cp filesystems filesystems.orig
```

and press Enter.

4. To merge the current and old filesystems files, type the following on two lines:

```
( grep -vp "^/usr:" filesystems.old ;  
  egrep -p "^.*usr:" filesystems ) > /tmp/filesystems
```

and press Enter.

If the system displays any error messages, repeat step 4.

If the system does not display any messages, continue with step 5.

5. To move the filesystems file from the **/tmp** directory to the **/etc** directory, type the following:

```
mv /tmp/filesystems /etc
```

and press Enter.

6. To verify that the **/etc/filesystems** file is correct, type the following:

```
lsfs
```

and press Enter.

If the output from the **lsfs** command is correct, continue with step 7.

If the output from the **lsfs** command is not correct, do the following:

- a. Type the following:

```
cp filesystems.orig filesystems
```

and press Enter.

- b. Return to step 4.

7. To list the NFS file systems in the **/etc/filesystems** file, type the following:

```
lsfs -v nfs
```

and press Enter.

8. For *each* directory in the listing, type the following :
(where *MountPoint* is the name of each directory in the Mount Pt column)

```
mkdir -p MountPoint
```

and press Enter.

9. To list the CD-ROM file systems in the **/etc/filesystems** file, type the following:

```
lsfs -v cdrfs
```

and press Enter.

10. For *each* directory in the listing, type the following:
(where *MountPoint* is the name of each directory in the Mount Pt column)

```
mkdir -p MountPoint
```

and press Enter.

11. If you want to mount any journaled file systems now, use the **smit mountfs** command.

You have finished restoring your **/etc/filesystems** file. Go to “Where Do I Go Next?” on page 5-53.

Complete Overwrite Installation: Importing Any Nonroot Volume Groups

If you have any nonroot volume groups, perform the following procedure.

This procedure is used to make any nonroot volume group hard drives known to your system. If this procedure is not done you will not be able to access your nonroot volume hard drives.

This procedure describes how to import a nonroot volume group and mount the file systems.

PROCEDURE

1. Type the following:

```
smit importvg (or smit -C importvg if you are working in AIXwindows)
```

and press Enter.

2. **VOLUME GROUP name** is highlighted.
Type the name you want to call this volume group.

3. Move the cursor to `PHYSICAL VOLUME` name.
Press F4 to list the available physical volumes.
A list of physical volumes should be displayed.
4. Move the cursor to select the physical volume you want to import.
Press Enter.
5. A Command Status screen appears. When the `Command:` status indicator changes to `OK`, press F10 to exit SMIT.
6. If you want to mount any journaled file systems now, use the **`smit mountfs`** command.
Continue to the next section, “Where Do I Go Next?”

Where Do I Go Next?

Go to “Chapter 8. Post-Installation Procedures.”

L. Change the Way a Client Accesses a Remote /usr Server

This section describes how to change the way a client accesses a remote **/usr** server. You must have already installed Version 3.2 on the remote **/usr** client to use this section.

Concepts

After installing a client for use with a **/usr** server, it may be necessary to change the client's or server's network attributes or to change the network connection to the **/usr** server.

You may need to change any of the following:

- Client IP Address
- Gateway IP Address
- Network Device Type (ethernet or token ring)
- Ethernet Network Interface Type (Standard or 802.3)
- Subnet Mask
- Token Ring Data Rate (4 or 16 Megabit)
- Network Adapter (ent0, ent1, tok0, etc)
- Ethernet Connector Type (bnc or dix)
- Server IP address
- Path of the Directory on the **/usr** Server to be Used as the Client's **/usr** File System.

The **/sbin/net.info** file contains the above items "Client IP Address" through "Server IP address" on one line separated by spaces. The **/sbin/net.info** file has the following format:

```
client IP address
server IP address
gateway IP address or 0 (zero) if no gateway is used
network adapter type (69 for ethernet, 79 for token ring)
hardware slot (0 (zero) for everything)
ethernet network interface type (1 for 802.3, 0 (zero) for standard)
subnet mask or 0 (zero) if subnet not used
token ring data rate ( 3 or 5 configures 16 megabit, 0 (zero) configures 4 megabit)
name of network adapter (example: ent0)
ethernet connector type (1 for bnc, 0 (zero) for dix)
```

An example of a **/sbin/net.info** entry is:

```
192.100.165.18 192.100.165.28 0 79 0 0 255.255.255.0 0 tok0 0
```

This would be the only line in the client's **/sbin/net.info** file. This example would use a 4 megabit Token-Ring to mount the **/usr** file system on the client with IP address 192.100.165.18 from the server with IP address 192.100.165.28 on a network with subnetmask 255.255.255.0.

The boot process uses the existence of the **/sbin/net.info** file as a signal to try to access the **/usr** file system remotely. If the **/sbin/net.info** file does not exist, the boot process will access the **/usr** file system from the hard disk.

The **/etc/filesystems** file contains the characteristics of the file systems. If the client has been set up to access the **/usr** file system from a server, the **/etc/filesystems** file will have a stanza similar to the following:

```
/usr:
    dev          =/usr
    vfs          =nfs
    nodename     =server_ip_address
    mount        =automatic
    check        =false
    type         =boot
    options      =ro,fg,hard,intr,retry=3
```

You have three choices:

If you need to change the items “Client IP Address” through “Ethernet Connector Type”, go to section “Changing the Network Interface and Attributes of a /usr Client.”

If the service of a client's **/usr** has been moved to another machine, go to section “Changing the Client's /usr Server.”

If the path of the directory on the /usr server has been changed, go to section “Changing the Directory Path on the /usr Server to be Used as the Client's /usr filesystem.”

Changing the Network Interface and Attributes of a /usr Client

This procedure describes how to change the network interface and attributes of a **/usr** client.

PREREQUISITE TASKS OR CONDITIONS

1. The **/usr** server must be set up to export a file system to be used as the client's **/usr** file system.
2. The **/usr** client must have been installed using the remote **/usr** option of the BOS installation.

PROCEDURE

1. On the client machine, type the following:

```
smit mktcpip
and press Enter.
```

2. Change the appropriate network attribute or attributes and press Enter.
3. When the **Command:** status indicator changes to **OK**, press **F10** to exit **SMIT**.
4. Edit the client's **/sbin/net.info** file and update the appropriate field with the new information as outlined in the concepts section above.
5. For the change to take effect, you must reboot the client. Type the following:

```
shutdown -r
and press Enter.
```

You have finished changing the network interface or attributes of a **/usr** client and you are finished with this chapter.

Changing the Client's /usr Server

This procedure describes how to access a different **/usr** server.

PREREQUISITE TASKS OR CONDITIONS

1. The new **/usr** server must be set up to export a file system to be used as the client's **/usr** file system.
2. The **/usr** client must have been installed using the remote **/usr** option of the BOS installation.
3. Knowledge of an system editor such as the **vi** editor.

PROCEDURE

1. On the client machine, edit the **/etc/filesystems** file and change the *nodename* field of the **/usr** stanza to contain the new **/usr** server's ip address.
2. On the client machine, edit the **/sbin/net.info** file and change the second item to contain the new **/usr** server's ip address. See the "Concepts" section on page 5-54 for more information on the **/sbin/net.info** file.
3. For the change to take effect, you must reboot the client. Type the following:

```
shutdown -r  
and press Enter.
```

You have finished changing the client's **/usr** server and you are finished with this chapter.

Changing the Directory Path on the /usr Server to be Used as the Client's /usr File System

This procedure describes how to change the directory path on the **/usr** server to be used as the client's **/usr** file system.

PREREQUISITE TASKS OR CONDITIONS

1. The **/usr** client must have been installed using the remote **/usr** option of the BOS installation.
2. Knowledge of an system editor such as the **vi** editor.

PROCEDURE

1. On the server machine, create a Shared Product Object Tree (SPOT) as described in Chapter 10, section D, "Preparing a Shared Product Object Tree (SPOT) Server."
2. On the server machine, use the **smit mknfsexp** command to export the file system to be used as the client's **/usr** file system.

Note: Make sure you give the client root access permissions on the file system.

3. On the client machine, edit the **/etc/filesystems** file. Change the *dev* field of the **/usr** stanza to contain the full path name of the directory on the server which is to be used as the client's **/usr** file system.
4. For the change to take effect, you must reboot the client. On the client machine, type the following:

```
shutdown -r  
and press Enter.
```

You have finished changing the directory path on the **/usr** server to be used as the client's **/usr** file system.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **pax** command, **sysck** command, **ls** command.

The Backup Overview in *General Concepts and Procedures* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *General Concepts and Procedures* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The file systems Overview in *General Concepts and Procedures* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *General Concepts and Procedures* provides information on mounting files and directories, mount points, and automatic mounts.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000*.

Using SMIT in *Getting Started: Managing the IBM RISC System/6000*.

IBM RISC System/6000 Problem Solving Guide.

ADVANCED PATH: BOS Installation for Use with a /usr Server

A. Complete the BOS Installation Plan

1. Go to "Chapter 16. Planning" and complete the BOS Installation Plan.

B. Start the System

1. Make sure your system is OFF.
2. Turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, tape drives, monitors, and external disk drives.
4. Turn the system unit power switch to the ON position.
5. After several minutes, the 200 code will appear on the three-digit LED display.
6. Insert the BOS CD-ROM, the first BOS tape, or the BOS boot diskette.
7. Turn the system key to the SERVICE position.
8. Press the yellow system Reset button twice in quick succession.
9. If you are installing from CD-ROM or tape, go to step 12.
10. When c07 appears on the three-digit LED display, insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
11. When c07 appears the second time, insert the BOS Display diskette.
12. When c31 appears on the three-digit LED display, select the device that you want to use as your console.
13. If you are installing from diskettes, insert the BOS Install/Maint diskette.
14. At the 3.2 INSTALLATION AND MAINTENANCE screen, enter 3.
15. What type of installation are you performing?
 - PRESERVATION
 - At the METHODS OF INSTALL screen, enter 1.
 - Go to section "D. Preservation: Change the Current System Settings."
 - COMPLETE OVERWRITE
 - At the METHODS OF INSTALL screen, enter 2.
 - Go to section "C. New or Complete Overwrite: Change the Current System Settings."
 - NEW
 - Go to section "C. New or Complete Overwrite: Change the Current System Settings."

C. New or Complete Overwrite: Change the Current System Settings

1. To change the LOCALE (language), enter 1 and choose the correct locale (language).
2. To change the INPUT Installation Device, enter 2 and choose the correct installation device.
3. To change the DESTINATION Disks, enter 3 and choose your destination disks.
4. To change the STARTUP (Boot) Disk, enter 4 and choose your startup disk.
5. To change the NETWORK Interface to /usr Server, enter 5 and choose network interface.

D. Preservation: Change the Current System Settings

1. To change the LOCALE (language), enter `1` and choose the correct locale (language).
2. To change the INPUT Installation Device, enter `2` and choose the correct installation device.
3. To change the DESTINATION root VG, enter `3` and choose the correct destination root VG.
4. To change the NETWORK Interface to `/usr` Server, enter `4` and choose the correct network interface.

E. Start the Installation Process

1. From the Current System Settings screen, enter `0` to begin the installation.
2. From the FINAL WARNING screen, enter `0` to start the installation.
3. Choose the `bos.obj` from the Network Install File Selection menu.
4. Enter `0` to continue the installation.
5. When the reboot screen appears, do the following:
 - Remove the CD-ROM, tape, or diskette from the drive.
 - Turn the System key to the NORMAL position.
 - Press Enter to reboot the system.
6. After the system reboots, log in to the system as root.

F. Set Up the Display Device

1. If you are using an HFT, skip below to section “H. Read the BOS README File.”
2. Enter `export TERM=xxx` where `xxx` is your display name.
3. Enter `chdev -a term=xxx -l zzz` where `xxx` is your display name and `zzz` is the tty device you are using.

G. Setting Up an ASCII Terminal

1. If you are using a non-English Locale (language), do the following:
 - Enter `ls /etc/nls/termmap` to list the available input and output map files.
 - Enter `setmaps -t mapfile` where `mapfile` is from the termmap listing.
 - Enter `chdev -l ttyx -a imap=mapfile -a omap=mapfile` where `x` is the tty device you are using and `mapfile` is from the termmap listing.

H. Read the BOS README File

1. Enter `pg /usr/lpp/bos/README` to read the “Installation” chapter of the BOS README file.

I. Set the Date and Time

1. Enter `date` to check the system date.
2. If the date is not correct, execute `smit chtz` to change the date.

J. BOS Installation Completion Tasks

What type of installation are you performing?

PRESERVATION	Go to the procedure called “Preservation Installation: Restoring the <code>/etc/filesystems</code> File.”
COMPLETE OVERWRITE	Go to the called procedure “Complete Overwrite Installation: Importing Any Nonroot Volume Groups.”
NEW	Go to the section called, “Where Do I Go Next?”

Preservation Installation: Restoring the `/etc/filesystems` File

If you are using the “Upgrade Utilities” to restore your configuration, skip this procedure and go to “Where Do I Go Next?”

1. Enter `cd /etc` at the system prompt.
2. Enter `lsvg -o | xargs imfs` to create the mount points for all journaled file systems known to the system.
3. Enter `cp filesystems filesystems.orig` at the system prompt.
4. To merge the current and old filesystems files, enter the following on two lines:

```
( grep -vp "^/usr:" filesystems.old ;  
  egrep -p "^.*usr:" filesystems ) > /tmp/filesystems
```

If the system displays any error messages, repeat step 4.
If the system does not display any messages, continue with step 5.
5. Enter `mv /tmp/filesystems /etc` to move the `filesystems` file from the `/tmp` directory to the `/etc` directory.
6. Enter `lsfs` to verify that the `/etc/filesystems` file is correct.
If the output from the `lsfs` command is correct, continue with step 2.
If the output from the `lsfs` command is not correct, enter `cp filesystems.orig filesystems` and return to step 3.
7. Enter `lsfs -v nfs` to list the NFS file systems in the `/etc/filesystems` file.
8. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
9. Enter `lsfs -v cdrfs` to list the CD-ROM file systems in the `/etc/filesystems` file.
10. For *each* directory in the listing, enter `mkdir -p MountPoint` where *MountPoint* is the name of each directory in the Mount Pt column.
11. Execute the `smit mountfs` command to mount any journaled file systems.
12. Go to the section called “Where Do I Go Next?”

Complete Overwrite Installation: Importing any Nonroot Volume Groups

If you do not have any nonroot volume groups, skip this procedure and go to “Where Do I Go Next?”

1. Execute **smit importvg** to import and varyon any nonroot volume groups.
2. Execute **smit mountfs** to mount any journaled file systems.
3. Go to section “Where Do I Go Next?”

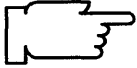
Where do I go next?

Go to “Chapter 8. Pos-Installation Procedures.”

NOTES

Chapter 6. Optional Software Installation

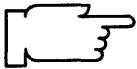
This chapter describes how optional software products are installed on standard workstations. If you want to install optional software products onto a diskless server, refer to “Chapter 10. Diskless System Installation.”



Note: Your Version 3.2 Base Operating System (BOS) must be installed before you use this procedure. To determine the proper procedure for installing BOS, refer to the section titled “Where Do I Go in This Manual” on page 0-1 (immediately following the Table of Contents) .

Before you begin using the procedures in this chapter to install optional software products and updates on your system, read section “E. Optional Software Installation and Update Concepts” beginning on page 6-20. This section defines the terms and discusses the concepts used in this chapter, including the following topics:

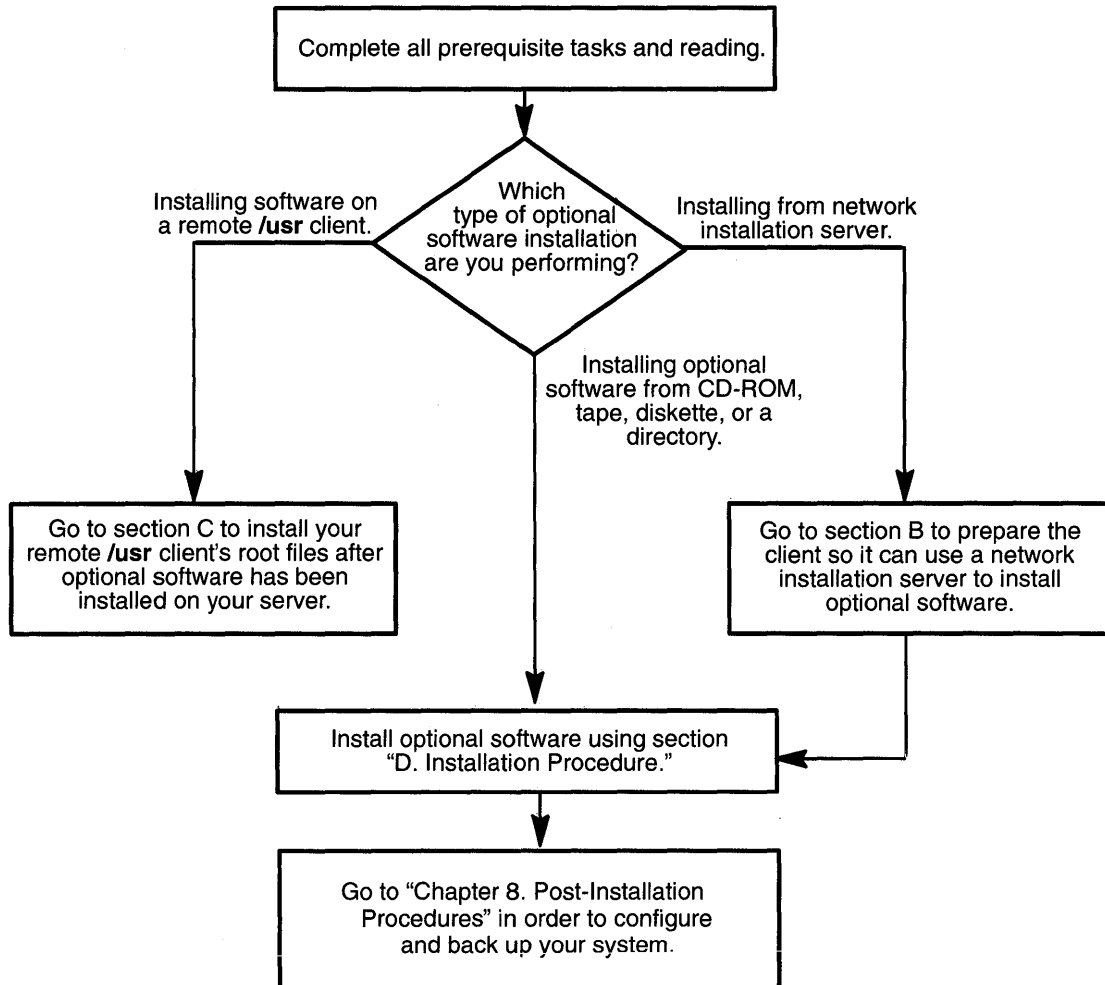
- How a software product is packaged (divided between the `usr`, `root`, and `share` parts).
- The process of *applying*, *committing*, and *rejecting* an optional software product or update.
- The output of the installation process.
- How the update process has changed from Version 3.1 to Version 3.2.
- Requisite and dependent products.
- Superseded updates.
- The software inventory information contained in the Software Vital Product Data (SWVPD) databases.



Note: For vendors who want to develop product packages to be installed using the `installp` command, refer to the section titled “Software Product Installation Package Process” in chapter 17 of the *General Programming Concepts* manual.

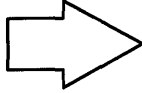
Flowchart for Optional Software Installation

This flowchart outlines the basic steps you must perform to install optional software from CD-ROM, tape, diskette, network server, or a directory.

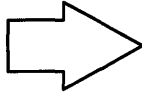


Prerequisite Tasks or Conditions

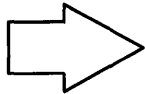
1. The Version 3.2 Base Operating System (BOS) is installed.
2. One of the following sources of software is available:



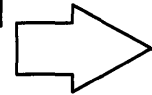
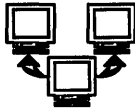
Do the following only if you are installing from CD-ROM:
Find the CD-ROM that contains the optional software that you want to install and insert it into a disc caddy.



Do the following only if you are installing from tapes:
Find the tapes that contain the optional software that you want to install.

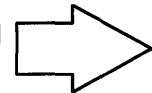


Do the following only if you are installing from diskettes:
Find the diskettes that contain the optional software that you want to install.



If you are installing from a network installation server, the server must have already been created. If you need to create an installation server, refer to "Chapter 9. Creating an Installation Server."

Preloaded
Directory



Your system must have been preloaded with your optional software at the factory or you must have loaded a directory yourself.

3. You should be familiar with the basic concepts of optional software installation. If you are not, read section "E. Optional Software Installation and Update Concepts" beginning on page 6-20, then return here and continue with step 4.
4. You should be familiar with the basic operations of your system's hardware. If you are not familiar with your hardware, read "Chapter 18. Hardware Basics," then return here and continue with step 5.
5. In this chapter, you will be using the System Management Interface Tool (SMIT) to install optional software. If you are not familiar with SMIT, read "Chapter 19. SMIT Basics," then return here and continue with step 6.
6. Continue with the next section, "Procedural Overview."

Procedural Overview

During the procedure in this chapter, you will be performing the following steps:

- A . Determine Your Procedural Start Point
- B . Preparations for Optional Software Installation over a Network
- C . Installing Software on a Remote **/usr** Client
- D . Installation Procedure



Note: If you are unfamiliar with the basic concepts of optional software installation, read section “E. Optional Software Installation and Update Concepts” beginning on page 6-20, then return here and continue with the next section when you are ready to begin the installation.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin in the next section. This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of the Base Operating System and only need a minimal set of instructions, you can skip to page 6-34 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin in the next section.

A. Determine Your Procedural Starting Point

If you are installing from a network installation server, go to section “B. Preparation for Optional Software Installation over a Network.”

If you are installing a remote **/usr** client, go to section “C. Installing Software on a Remote **/usr** Client” on page 6-6.

If you are installing from tape, diskette, or a directory on your own system (for example, a preloaded system), go to section “D. Installation Procedure” on page 6-8.

B. Preparations for Optional Software Installation Over a Network

If you installed BOS onto this system using the procedures in “Chapter 4. BOS Installation from a Network” and you did not unmount the server’s installation directory after you finished chapter 4, go to section “D. Installation Procedure” on page 6-8.

If your machine uses an installation server as the source of the software you want to install, your machine is called a client of that server.

If you have never before used the network server to install software onto this client, you must complete the procedure in this section. This section describes how to prepare a client so that it can use a network installation server to install or update software.

PROCEDURE

Note: The following procedures assume that the **/inst.images/risc_sys6000/3.2** directory on the server was used to store the software. If a different directory was used, you should use that directory’s name in step 7 of this procedure.

This procedure describes how to create the mount point on the client and then mount via NFS the file system from the server that holds the installation and update images.

1. If you have not already logged in as root on the system you want to install onto, log in as root now.
2. The following software and hardware must already be installed on your client:
 - The Version 3.2.
 - TCP/IP and NFS software. If this software is not yet configured, refer to “Chapter 14. Network Configuration” and follow the procedures for configuring TCP/IP and NFS.
 - An Ethernet or Token-Ring network adapter.
3. On the client machine where you want to install the software, type the following:

```
ls /usr/sys/inst.images
```

and press Enter.

If the error message `The file /usr/sys/inst.images does not exist` is displayed, continue with step 4.

If the error message does not appear, skip to step 5.

4. Type the following:

```
mkdir -p /usr/sys/inst.images
```

and press Enter.

5. On the client, type the following:

```
smit mknfsmnt (or smit -C mknfsmnt if you are working in AIXwindows)
```

and press Enter.

6. `PATHNAME` of mount point is highlighted.

Note: Do *not* press Enter until you get to step 9.

Type the following:

```
/usr/sys/inst.images
```

7. Move the cursor to `PATHNAME` of remote directory.

Type the name of the directory on the server that holds the installation and update images.

For example, if the installation server was created using the suggested directory name, you would type:

```
/inst.images/risc_sys6000/3.2
```

8. Move the cursor to `HOST` where remote directory resides.

Type the name of the installation server that contains the installation images.

9. To mount the remote file system, press Enter.

10. Press F10 to exit SMIT.

You are now ready to begin the installation procedure. Remember that when you type your selection for `INPUT device / directory` for software, you should type `/usr/sys/inst.images`.

Go to section “D. Installation Procedure” on page 6-8.

C. Installing Software on a Remote /usr Client

The following procedure is used to install/update your remote **/usr** client's root files after new products or updates have been installed on your **/usr** server. This procedure does not need to be run when BOS is installed on a remote **/usr** client. However, this procedure should be run on each remote **/usr** client of the **/usr** server after new products or updates with root parts are installed on the **/usr** server. When software has been updated on the remote **/usr** server, it is very important that this procedure be run on the client *before* your client system is booted (started). If this is not done, you may not be able to successfully boot your client machine, depending on the software that was updated. You do not need to know the names of software that has been added or updated in **/usr** on the server. The process will automatically run for all products and updates installed in the server's **/usr** filesystem.

1. If you have not already logged in as root on your remote **/usr** client machine, log in as root now.
2. At the system prompt, type the following:

```
smit install (or smit -C install if you are working in AIXwindows)
and press Enter.
```

A screen similar to the following is displayed:

Installation and Maintenance

Move cursor to desired item and press Enter.

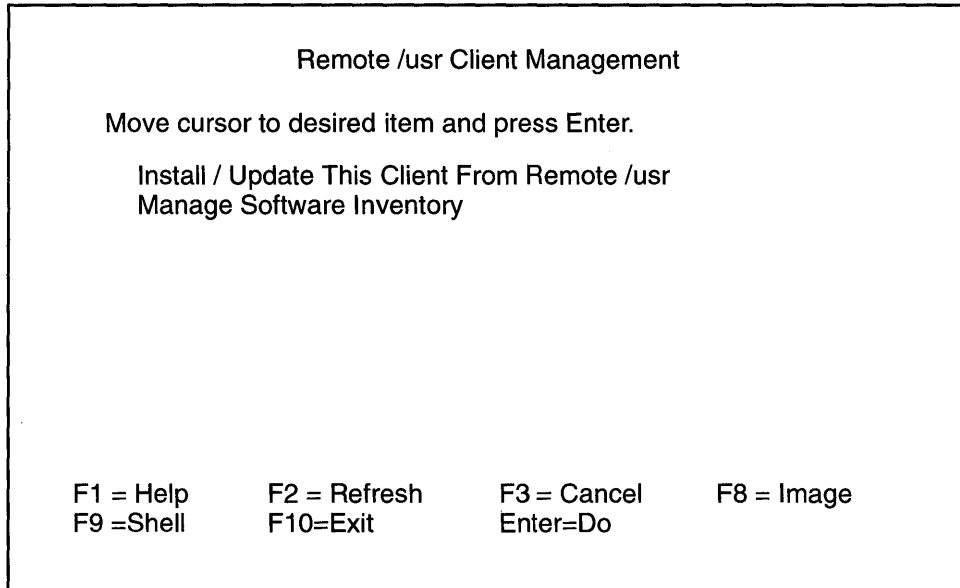
Standard Installation and Maintenance
Diskless Workstation Management
Remote /usr Client Management

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

3. Move the cursor to Remote /usr Client Management.

Press Enter.

A screen similar to the following is displayed:



4. Install / Update This Client From Remote /usr is highlighted. Press Enter.
5. A Command Status screen appears. When the Command: status indicator changes to OK, press F10 to exit SMIT.

Note: If no new software with root parts has been installed on your server since the last time you ran this command, you may see two messages displayed. The messages state that no software products were found and that no valid products were left to process. These messages are just indicating that you did not need to perform this procedure and that you can now exit SMIT.

You have finished installing your /usr client and you are finished with this chapter.

D. Installation Procedure

The procedures in this chapter are for use on standard workstations. If you want to install onto a diskless server, you should *instead* go to “Chapter 10. Diskless System Installation.”

1. Go to page 16-24 of the “Chapter 16. Planning” and complete the Optional Software Installation Plan. Return here and continue with step 2 when the plan is completed.
2. If you have not already logged in as root on the system you want to install onto, log in as root now.
3. If the Special Instructions section in “Chapter 17. Product Information” instructed you to stop any process, do so now.



Note: If this system is a diskless server, you must also stop processes on the diskless clients served by this server.

4. Are you installing from CD-ROM?

NO: Go to step 5.

YES: Read the following warning and, if necessary, perform the following procedure:



Warning: If you are accessing InfoExplorer from your CD-ROM (as described in “Chapter 13. Mounting the InfoExplorer CD-ROM”) and you want to install optional software from the same CD-ROM drive, you must first perform the following procedures before you invoke SMIT:

- a. Type the following:

```
umount /usr/lpp/info/Language (where Language is the name  
of the language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
- c. Place the CD-ROM that contains the optional software into a disc caddy, and insert the caddy into the CD-ROM drive.

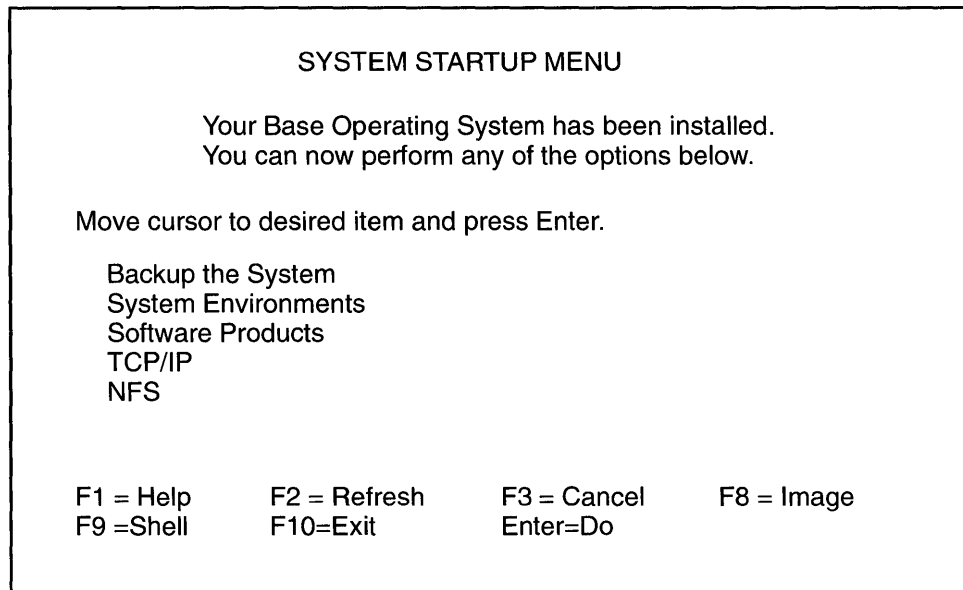
During the installation, SMIT will create and mount a temporary mount point for the CD-ROM drive.

5. If you are using CD-ROM, tapes, or diskettes, insert the CD-ROM (in a caddy), tape, or diskette that contains your optional software into the drive.

6. At the system prompt, type the following:

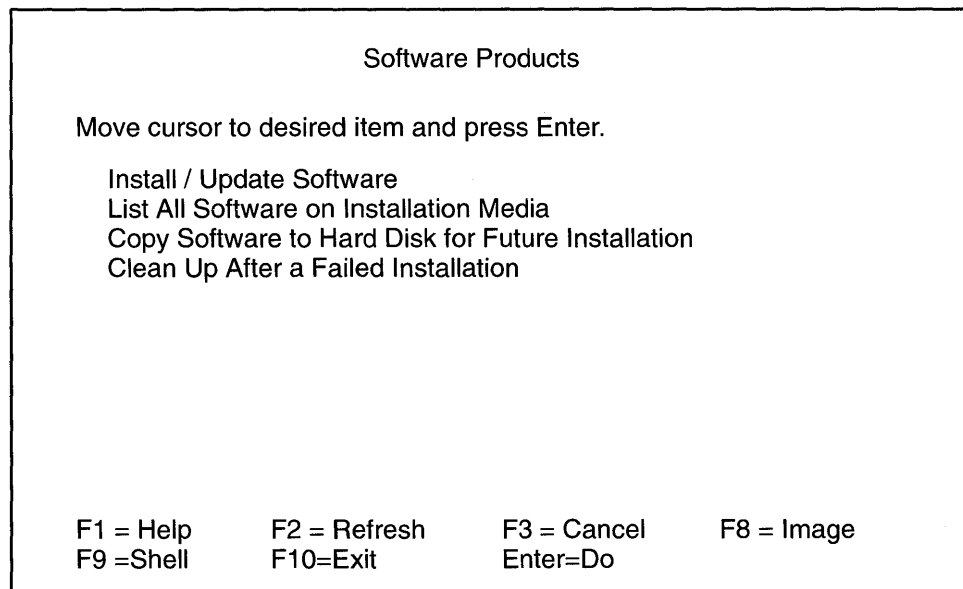
```
smit startup      (or smit -C startup if you are working in AIXwindows)
and press Enter.
```

A screen similar to the following is displayed:



7. Select **Software Products**, and press Enter.

A screen similar to the following is displayed:



8. Select **Install / Update Software**, and press Enter.

A screen similar to the following is displayed:

Install / Update Software			
Move cursor to desired item and press Enter.			
Install Software With Updates Install Software Without Updates Install Updates Only			
F1 = Help	F2 = Refresh	F3 = Cancel	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

9. Select **Install Software With Updates**, and press Enter.

A screen similar to the following is displayed:

Install Software With Updates			
Type or select a value for the entry field. Press Enter AFTER making all desired changes.			
* INPUT device / directory for software	[Entry Fields]	[]	+
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

10. Press F4 to generate a list of installation device file names.

A screen similar to the following is displayed:

Install Software With Updates

Type or select a value for the entry field.

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
/dev/rmt0.1 (2.3 GB 8mm Tape Drive)
/dev/rmt1.1 (150 MB 1/4-Inch Tape Drive)
/dev/fd0 (Diskette Drive)
/usr/sys/inst.images
/usr/sys/inst.images/bosadt
/usr/sys/inst.images/bosadt.data

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

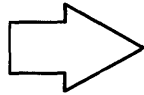
In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

If you select the `/dev/cd0` device, SMIT uses the `/mnt/cd` directory as the input device. If you select the `/dev/cd1` device, SMIT does special processing to create and temporarily mount a CD-ROM file system for the drive, and then it uses the temporary mount point as the input device.

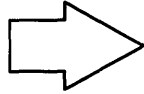


Note: When installing with the CD-ROM device using `installp` on the command line, the CD-ROM device must be mounted on a CDRom file system before the command can be issued. The input device / directory (`-d` flag) for the `installp` command must be the directory on which the CD-ROM is mounted.

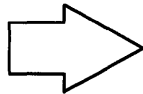
11. Move the cursor to highlight the device or directory from which you are installing.



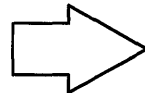
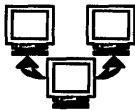
Select the name of the CD-ROM drive into which you inserted the software CD-ROM.



Select the name of the tape drive into which you inserted the software tape.

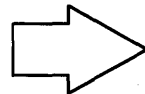


Select the name of the diskette drive where you inserted your first diskette.



Select **/usr/sys/inst.images**.

Preloaded
Directory



Select **/usr/sys/inst.images**.

12. After you have highlighted your choice, press Enter.

A screen similar to the following is displayed:

Install Software With Updates			
Type or select values in entry fields.			
Press Enter AFTER making all desired changes			[Entry Fields]
* INPUT device / directory for software	/dev/rmt0.1		+
* SOFTWARE to install	[all]		
Automatically install PREREQUISITE software?	no		+
COMMIT software?	no		+
SAVE replaced files?	yes		+
VERIFY software?	no		+
EXTEND file systems if space needed?	yes		+
REMOVE input file after installation?	no		+
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7 = Edit	F8 = Image
F9 = Shell	F10 = Exit	Enter = Do	

13. Move the cursor to the entry field for SOFTWARE to install. In this field you tell the system the names of the software products and options you want to install.

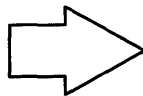
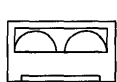
You have two ways to use this field:

- all— the default setting. This tells the system that you want to install *all* of the software and updates that are on the specified INPUT device or directory. If you want to install *all* of the software, go to step 17 on page 6-15.
- You can manually select *some* of the software. To see the list of the names of the software options available from the selected input device or directory, press F4, and then continue with step 14.

14. Press F4, a screen similar to the following is displayed:

SOFTWARE to install				
Move cursor to desired item and press F7.				
ONE OR MORE items can be selected.				
Press Enter AFTER making all selections.				
#	Option Name	Level	I/U	Q Content
=====				
	bosadt.all			
#	Description: Will include ALL the images for bosadt.			
#				
#	bosadt.bosadt.data	03.02.0000.0000.	I N	usr
#	Base Application Development Toolkit.			
#				
#	bosadt.xde.obj	03.02.0000.0000.	I N	usr
#	X window Development Environment.			
#				
#	bosadt.prof.obj	03.02.0000.0000.	I N	usr
#	Base Profiling Support.			
	[MORE...]			
	F1 = Help	F2 = Refresh	F3 = Cancel	
	F7 = Edit	F8 = Image	F10 = Exit	
	Enter=Do			

Note: The actual software list varies according to what software is on the input device you specify.



If you are using tapes, it may take several minutes for the system to display the software list.

15. This list displays the names of the software products and updates you can select for installation. Read the rest of this step for an explanation of the contents of this screen. When you are ready to begin making selections from the list, go to the procedures in step 16.

The following headings describe the contents of this list:

Option Name Specifies the name of the software product option that can be selected for installation. The first part of the name (up to the first period) is an abbreviation for the software product. The second part is an abbreviation for an option within that software product. For example, **bosadt.xde.obj** is the name for the Xwindow Development Environment option (xde) that is inside the Base Application Development Toolkit product (bosadt). For a complete listing of software products and their option names, refer to “Chapter 17. Product Information.”

Note: When the list is displayed, you will see that the first entry for each software product is **xxx.all**, where **xxx** is the specific software product name. If you select **xxx.all** for installation, then all of the options that start with the name **xxx** will be installed. In other words, all of the options listed after the **xxx.all** and up to the next software product will be installed automatically. For example, to install all of the Base Application Development Toolkit options, select **bosadt.all**. This will install all of the options that start with the name **bosadt**.

Level Specifies the code level number for this software release.

I/U Specifies whether the option is part of an installation package (I) or is part of an update package (G, S, or M). An update is software that fixes a defect in the product. There are three types of updates:

G Updates that are a part of the initial release of the product. Software products may not execute properly if G updates are not installed with the product.

S A Selective Fix. An update that fixes a specific defect in a product or contains a specific improvement for a product.

M A Preventive Maintenance package. This is a collection of fixes and/or improvements.

Q Represents quiescent or quiet. **Y** (yes) indicates that some software processes must be stopped before installing this option. **N** (no) indicates that it is not necessary to stop any software processes before installing this option. This indicator only tells you whether or not software processes need to be stopped. It does not indicate whether or not they are currently stopped. For a list of the processes that must be stopped, refer to “Chapter 17. Product Information.”

Content Specifies where the files for the option will be installed: the root (/), the **/usr**, or the **/usr/share** directories.

Description Describes the contents of the software product option.

This software listing may continue for several screens. The field headings only display on the first screen. They do not display on subsequent screens. However, you can scroll back to the first screen to view them.

16. Refer to your Optional Software Installation Worksheet for the list of software product options you chose to install. If you have not yet completed your plan, go to “Chapter 16. Planning” and complete the “Optional Software Installation Plan” and then return here and continue. Scroll through the list of software using the PageUp/PageDown keys, or the arrow cursor keys, to find the first option you want to select.



Note: If you see an update to the Base Operating System (BOS), make sure you install the update, even though it is not on your list of software to install.

a. When the software you want to install is highlighted, press F7 to select it. The > (greater than) symbol appears next to each item that you select to indicate that it is selected for installation. You may select as many options as you want to install. To deselect a previously selected item, move the cursor to highlight that item and press F7.



Note: If you select a **xxx.all** option, a selection marker (>) will appear next to **xxx.all**, but no markers will appear next to the options covered by that **xxx.all**. By selecting the **xxx.all** option, all of the options with the same product name (the product name xxx) will be installed, even though they are not marked.

b. Continue scrolling through the list selecting all of the software you want to install.
 c. When you have finished selecting, scroll through the list again and double check that your selections are correct. Make sure you have selected any updates to the Base Operating System (BOS).



Note: If you exit this list and return to it again, then the list will be cleared of all previous selections. All your previous selections will be lost and you will have to start over and reselect the options.

d. When you are sure that your selections are correct, press Enter. A screen similar to the following is displayed:

Install Software With Updates			
Type or select values in entry fields.			
Press Enter AFTER making all desired changes.			[Entry Fields]
* INPUT device / directory for software	/dev/rmt0.1		+
* SOFTWARE to install	[bosadt.all	>	
Automatically install PREREQUISITE software?	no		+
COMMIT software?	no		+
SAVE replaced files?	yes		+
VERIFY software?	no		+
EXTEND file systems if space needed?	yes		+
REMOVE input file after installation?	no		+
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

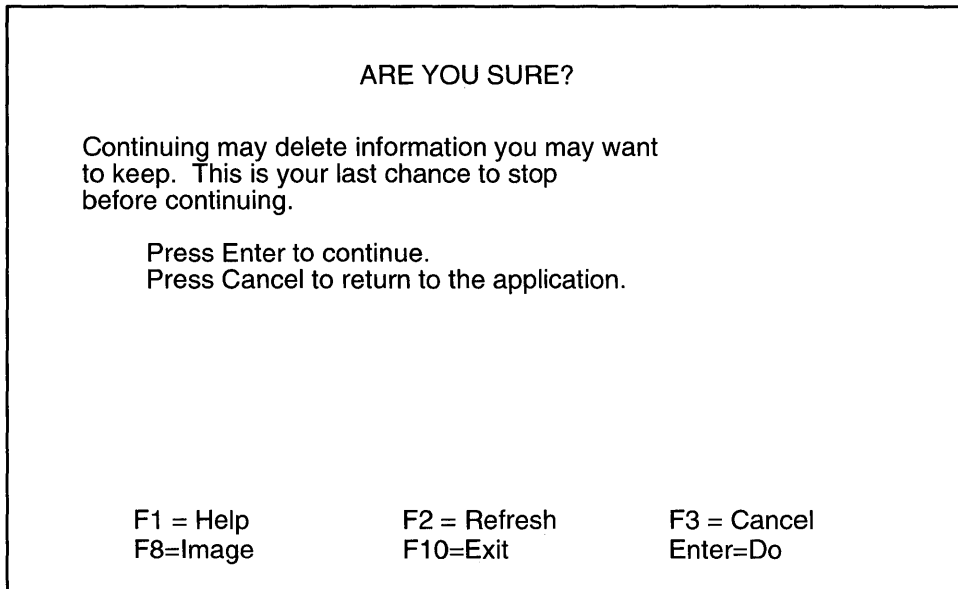
17. The system automatically enters the default values for the remaining entry fields. Read the information in the following table to determine if you want to use the default settings.

If you want to change the settings, move the cursor to the field and use the Tab key to toggle *yes* or *no*.

Entry Field	Yes	No
Automatically install PREREQUISITE software?	Automatically installs any software that is a prerequisite for the software products you choose to install.	(Default) Does <i>not</i> automatically install software that is a prerequisite for the software products you choose to install. If the system encounters a missing prerequisite for a software product option, the installation of that option fails and the system lists the required prerequisites.
COMMIT software?	Commits all of the software you choose to install.	(Default) Applies all of the software you choose to install, but does not commit it. When software is applied to the system, it becomes the active version of the software.
SAVE replaced files?	(Default) Saves existing copies (if any) of the software you are installing until the software is committed. In case of a failed installation, the cleanup procedure is used to retrieve software.	Does <i>not</i> save existing copies of the software you are installing. In case of a failed installation, the cleanup procedure cannot retrieve software. You must reinstall.
VERIFY software?	Instructs the system to perform a checksum in addition to the basic verification of files.	(Default) Instructs the system to <i>not</i> perform a checksum. Only a basic verification will be done. The checksum process can add a significant amount of time to the installation process.
EXTEND file systems if space needed?	(Default) Extends file systems if space is needed to install software. Note: Once a file system is extended, it cannot be contracted. It must be deleted to retrieve space.	Does <i>not</i> extend file systems to meet the space requirements of the software you are installing.
REMOVE input file after installation?	(This option is only valid if you are installing from a file or directory on your system. If you are installing from tape, diskette, or network, choose the default, no.) Deletes the installation image files of the software products you are installing after installation is complete. An installation image file contains a copy (in backup format) of the software that you are installing and other files the system uses for installation. If you want to recover hard disk space, choose "yes." Note: If Automatically install PREREQUISITE software is set to yes, prerequisite software will also be removed.	(Default) Does <i>not</i> delete the installation image files of the software products that you are installing.

18. When you are satisfied with all the settings on this screen, press Enter to begin installing the software.

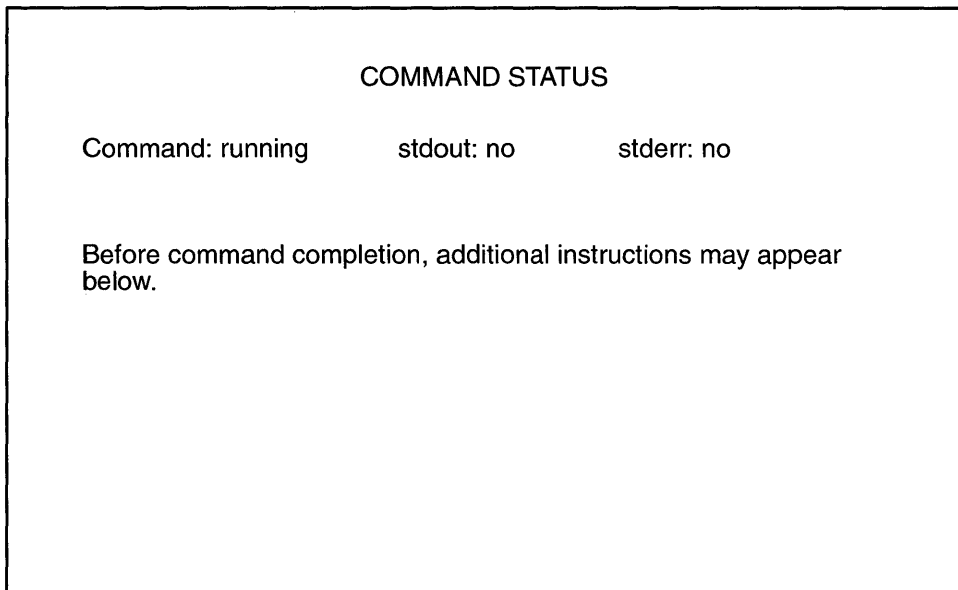
A screen similar to the following is displayed:



19. If you are ready to begin installing, press Enter.

If you are not ready to begin installing, press F3 and return to step 13 on page 6-13.

A screen similar to the following is displayed:



A series of messages will appear as the installation process proceeds. The amount of time the installation process takes will vary according to the amount of software you are installing and the type of system that you have.

Note: During the installation process, the system may prompt you to insert the next tape or diskette by displaying a message similar to the following:

```
Mount volume 2 on /dev/rmt0.
```

```
Press the Enter key to continue.
```

When this message appears, insert the specified tape or diskette into the input device and press Enter.

When the installation process finishes running, the `Command: status` indicator in the upper left corner of the screen will change from `running` to `OK` or `failed`. `OK` means that the installation process ran to completion (even though some options may not have installed successfully). `failed` means that the installation process did not complete.

Note: For a more detailed discussion of this screen, refer to the “Error Messages and Output from the `installp` Command” discussion on page 6-23 in this chapter.

20. When the installation process halts or finishes, the screen returns to the top of the list of messages that were generated during installation.
21. Search the message list to find any error messages that may have been produced or any software options that may not have been successfully installed during the installation process. Use the following function keys to review the system message list:
 - Home displays the start of the message list
 - End displays the bottom line of text
 - Page Down displays the next screen of text
 - Page Up displays the previous screen of text
 - The up and down arrow keys move through the message list line by line
- a. Use the message list to determine if there were any problems during installation and which software products were involved. For example, space limitations may have been exceeded or prerequisites may not have been selected for some of the software that you chose to install. The system would list how much extra space was needed or what additional software products must be installed as prerequisites.
- b. If you have identified a problem with installing a particular software product or option, you are only required to reinstall the software that was marked `FAILED` or was missing from the “Installp Summary” report. You should also select any prerequisites that may have been missed the first time. You do not need to reinstall the software that was marked `SUCCESS` in the summary report. If you need to perform the installation again, remove any tape or diskette from the drive, press F10 to exit SMIT, and return to step 3 on page 6-8 with the necessary corrections.
- c. If the installation was interrupted for any reason (for example, a power failure), you may need to use the cleanup procedure before continuing. Press F10 to exit SMIT and refer to the section called “Cleanup Procedure for Failed Optional Software Installations” on page 21-10.
- d. When all of your software has been installed successfully, continue with step 22.

22. If you are using diskettes and you have additional software to install, remove the diskette, insert the first diskette of the software product you want to install, press F3, and return to step 13 on page 6-13. Otherwise, continue with step 23.

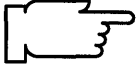
23. Press F10 to exit SMIT.

24. If you are using a CD-ROM, tape or diskettes, remove the CD-ROM, tape, or diskette from the drive.

Installation of your software is now complete. However, before you begin using your system you should complete the procedures in "Chapter 8. Post-Installation Procedures."

E. Optional Software Installation and Update Concepts

After the Base Operating System (BOS) is installed, you can install optional software products onto your system. You can also install *updates* to BOS and to optional software products. Updates fix a problem in a product or add an enhancement to the product. This guide describes in a step-by-step manner some of the functions that are available under the SMIT “Installation and Maintenance” menu for installing and updating software products.



Note: The information in this section is intended to supplement the optional software installation and update procedures described in this guide. By understanding the concepts presented in this section, you can gain a greater control over the products and updates installed on your system.

If, at this time, you do not wish to concern yourself with all of the details of optional software installation, you can follow the directions in this chapter and accept the defaults for steps you do not understand. However, it is recommended that you first read this section to familiarize yourself with the basic terms and concepts. Then, as you learn more about installing optional software and updates, you can review this section in more detail and take full advantage of the flexibility offered by the installation process.

Packaging of Software Products



Note: For vendors who want to develop product packages to be installed using the `installp` command, refer to the section titled “Software Product Installation Package Process” in chapter 17 of the *General Programming Concepts* manual.

The installation package for a software product may be divided into several separately installable options. This is done because many software products are very large and sometimes have many pieces that can be used independently of other pieces of the product. Dividing a product into separately installable options allows you to install only those options you need. You may prefer to simply install all the options of a particular product, or you may wish to carefully choose the options you install, especially if you have very limited hard disk space on your system.

In this chapter the term *product* is often used where it would really be more technically accurate to use *product option*. However, in the interest of readability the term product is used to mean either the entire product or any of its separately installable options. Whenever installation actions are being described, they can, in general, be applied to any separately installable option of a product. A distinction will be made between an entire product and its separate options only when it is necessary for the sake of clarity.

Beginning with the Version 3.2 the installation packaging of each option in a product may have been divided into three parts: the `usr`, `root` and `share` parts. Although this adds further complication to the understanding of the packaging, this parceling of a software product is necessary for the product to be used by diskless and remote `/usr` clients in Version 3.2. 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).

The `usr`, `root`, and `share` parts of a software product are described below.

- **The `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 programs are stored in the `/usr` file tree.
- **The `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 `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 a different hardware architecture. 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 that contain special fonts the product uses.

In a standard system, the `share` parts of products are usually stored in the `/usr/share` file tree.

The `share` part of a product is optional since 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 since 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 into the same installable package.

Product Identification

Two things are used to identify a software product: the product name and the level of the product. The level of a software product in Version 3.2 is defined as `vv.rr.mmmm.ffff.ppppppppp` 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, and
- `ppppppppp` is a character field of 1 to 9 characters that identifies the fix ID and is only used for updates.

The level `03.02.0000.0000` is an example of a software product level. The level `03.02.0000.0000.U400010` is an example of 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 `03.02.0000.0000` can also be written as `3.2.0.0`.

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 will always be monotonically increasing for each subsequent release of a product package. The higher precedence of the four fields goes from left to right (that is, level `3.2.0.0` is a later level than `2.3.0.0`).

Optional Software Installation

Installing an optional software product or update involves three major actions which may be taken upon the installable product or update. The software may be applied, committed, or rejected. These actions are described below:

- Apply

When you apply a software product to the system, the product is installed, and information is saved such that the product may later be removed from the system. The software is marked as being in the applied state. When you install a software product that is already installed, the current version of the product is removed from the system before the installation is begun. The new version becomes the currently active version of the software. The active version is the version that will be run when you start running the product. Before you can reinstall a software product, the current version of the product must be in the committed state.

When you apply an update, the update is installed, and the current version of that software product at the time of the installation is saved in a special save directory on the disk so that you can later return to using that version without having to reinstall it. When an update has been applied to a software product, that updated version of the product becomes the currently active version of the software.

Software that has been applied to the system can later be committed or rejected. The SMIT menu List All Applied but Not Committed Software (or 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.

From the SMIT installation menus (Install Software With Updates, Install Software Without Updates, or Install Updates Only), the apply action is executed as long as the `COMMIT software?` question is set to `no`. From the command line, the apply action is specified by using the **-a** flag with the **installp** command.

- 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. In SMIT, software can be committed at the time of installation by setting the `COMMIT software?` question to `yes` (or by using the **-ac** flags with **installp**). Note that committing already applied software does not change the currently active version of a software product. It merely removes saved files for previous versions of the software product.

For Version 3.1, updates could be just applied, but software products were always committed when they were installed. Although the Version 3.2 will now allow a Version 3.2 software product to be applied without being committed, the rejection of the installation level of the product will *not* have the same meaning as the rejection of updates to the product.

From the SMIT installation menus, selecting a `yes` answer to the `COMMIT software?` question will cause the software to be installed (applied) and then immediately committed. A software product that has been previously installed but was not committed when it was installed, may be committed via the SMIT menu Commit Applied Software (Remove Previous Version). From the command line, the commit action is taken by using the **-c** flag with **installp**.

- Reject

When you reject an applied software product, the software product's files are removed from the system, and the Software Vital Product Data (SWVPD) information is changed to indicate that the product has been removed from the system. System

configuration information for the product is also cleaned up, but this is dependent on the product and may not always be complete. If a previous version/release/level of the product was installed on the system, the system will not resume using that previous version.

When you reject an applied update, the rejected update's files are removed from the system. The version of the product previous to the update becomes the active version. A point to keep in mind is that any dependent updates that were applied after the rejected update are also removed from the system if the SMIT menu question REJECT versions that depend on above version? is answered yes (the **-g** flag of **installp**).

The SMIT menu Reject Applied Updates (Use Previous Version) may be used to reject updates. The menu Remove Applied Software Products must be used to reject software products. From the command line, the reject action is taken for both products and updates by using the **-r** flag with **installp**.

Note that the actions of applying or rejecting a version of a software product both change the currently active version of that product. The action of committing does not change the currently active version of that product.

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 fails. 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 can appear even though the product is not installed. However, other error messages do appear 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 file **/smit.log**.

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 are continually output during the installation process.

To determine if there were any products for which the installation could not begin, you should inspect the messages at the beginning of the **installp** output. This is where any messages are found concerning product installations that were not even started. 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).

An inspection of any preinstallation error messages and of the summary report will reveal the installation status of all products included in the input list.

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

```
# installp -acd/usr/sys/inst.images em78
```

Installp Summary

```
-----
Name                               Fix Id  Part                               Event
Result  State
-----
em78.obj      USR  APPLY  SUCCESS APPLIED
em78.obj      ROOT APPLY  SUCCESS APPLIED
em78.obj      USR  COMMIT SUCCESS COMMITTED
em78.obj      ROOT COMMIT SUCCESS COMMITTED
```

Information given in the summary report that identifies the software that was acted upon is the name of the product option, the fix ID (for updates only), and the part of the product. Other information given includes the requested action (event), the result of that action, and the resultant state of the product option.

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 option.
COMMIT	An attempt was made to commit the specified option.
REJECT	An attempt was made to reject the specified option.
CLEANUP	An attempt was made to perform cleanup for the specified option.

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	The specified action succeeded.
FAILED	The specified action failed.
CANCELLED	Although preinstallation checking passed for the specified option, it was necessary to cancel the specified action before it was begun. Interrupting the installation process with Ctrl-c can sometimes cause a canceled action, although, in general, a Ctrl-c interrupt causes unpredictable results.

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

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

Cleaning Up After a Failed Installation

The SMIT menu Clean Up After a Failed Installation can be used to clean up after a failed installation (or use the **-C** flag of **installp**).

When you use the cleanup action, an attempt is made to remove all incomplete pieces for any product for which an installation was abnormally terminated while in process. This includes any product in the state of applying, committing, or rejecting. When any product is in one of these states, no other installation action can be taken on any product until cleanup is performed. An attempt is also made to revert back to the previous version of the product as the currently active version. If this cannot be done, the product will be marked as broken. Unpredictable results can occur if you attempt to use a broken product. Therefore, it is advisable to reinstall any broken products.

In general, the cleanup operation is automatically performed if an installation cannot be completed because of failure or interruption. When an installation is run from the SMIT menus, any necessary cleanup is always attempted. When **installp** is run from the command line, any necessary cleanup will be attempted unless the **-Tk** option is used. However, it still might be necessary occasionally to do a separate cleanup operation because there are times when it is not possible to do an automatic cleanup, such as if the system power goes down during an installation.

Reinstalling a 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. In order to reinstall a product, it must be in the committed or broken states. Also, in general, the level of the product being installed must be later than the level of the product already installed on the system. If you wish to install a level of a product that is the same as or earlier than the level of the product already installed on your system, then you must use **installp** from the command line and use the **-F** flag. The force option of **installp** is not available from the SMIT menus. It is not necessary to force the installation of a product that is marked broken even if the level being installed is not later than the level of the product on the system.

Installing the Version 3.1-formatted Packages

The installation packages for software products have a different format in Version 3.2 than they had in Version 3.1. This was necessitated by the file tree restructuring and by the packaging of products into share, usr, and root parts. The **installp** command is backwards compatible, and it will install the Version 3.1-formatted product packages onto a Version 3.2 system. These Version 3.1-formatted packages can be run in a standard environment just as in a Version 3.1 system. However, Version 3.1-formatted packages cannot be installed and run in a client/server environment unless the software product owners have provided certain conversion files and routines to convert their products for use in a client/server environment.

For customers who have vendor products that are installed with the **installp** command, contact the vendor who owns the product or see the vendor documentation for specific instructions to determine whether the product can be converted to run in a client/server environment. For vendors who have products that are installed into a system with the **installp** command, see documentation in the *General Programming Concepts* manual on the “Software Product Installation Package Process” for information on the format of Version 3.2 installation packages and for information on the conversion of Version 3.1-formatted packages to run in the client/server environment.

Creating Installation Images on a Hard Disk

Installable image files (or installation packages) may be copied to the disk for use in future installations. Refer to “Chapter 9. Creating an Installation Server” for instructions on how to create installable image files from your installation media. 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, including the fix ID for update packages.

Updating Software in Version 3.2

Software that is distributed to fix a problem in a product is called an update. The SMIT menus Install Updates Only or Install Software With Updates are used to install updates. Updates are also installed with the **installp** command in Version 3.2.

In the Version 3.1 large packages of updates were periodically sent out for all software products. For Version 3.2 the method of packaging and distributing updates is significantly changed. This new packaging, which is characterized by a much smaller update package with a very small number of problems fixed, is sometimes described with the term *selective fix*. In general, the goal of the new packaging strategy is to have each update package contain the fix for a single customer-reported problem (called an APAR). Sometimes an update package may fix more than one customer-reported problem when the problems or the fixes are closely related.

The reason for packaging updates into these smaller fix packages is to enable you to gain more control over the selection of what problems in your system you want to fix and when you want to fix them. You may only want to install updates for problems that you have encountered on your system or that have a potential for causing problems with the applications that you use in your business. It may not always be expedient for you to install all the updates that are received for all your installed products.

The apply/commit/reject capability that is a part of the installation process is also much more useful in conjunction with the selective fix capability of choosing small fixes for individual problems. When you install update packages on your system, if you choose to apply the updates (rather than commit them at installation time), you then have the capability of later rejecting those updates. If you encounter a particular update that is causing problems in your system, you may reject that update without having to reject all the other updates that you installed. Once you have been running with an update or group of updates, and you are convinced that the updates have caused no problems, you may wish to commit those updates in order 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. For Version 3.2-formatted updates, a new identifier called the fix ID has been added. For IBM products, the fix ID is a seven-character identifier that begins with "U4."

Each Version 3.2-formatted update package has a unique fix ID associated with it. The fix ID becomes a part of the product level for each software product option that is part of the update package. If the situation occurs where the fix for one problem spans across software products, then a separate fix ID is assigned to each software product update package. Thus, the fix ID is associated with the update packaging.

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 wish to know more details about *requisites*, see the **ckprereq** command in the *Commands Reference* manual.

From any of the SMIT installation menus, answer *yes* to the question, `Automatically install PREREQUISITE software?` in order to have *requisites* automatically installed. From the command line the **-g** flag of **installp** is used to automatically install 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.

Before a software product or update can be committed, all products or updates that are *requisites* of the specified product or update must also be committed. From the SMIT menu "Commit Applied Software (Remove Previous Version)," answer *yes* to the question `COMMIT older versions if above version uses it?` in order to have *requisites* automatically committed. From the command line, use the **-g** flag of **installp**.

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 rejected, all products or updates that are *dependent* upon the specified product or update must also be rejected. From the SMIT menu "Reject Applied Updates (Use Previous Version)," answer *yes* to the question `REJECT versions that depend on above version?` in order to have *requisites* automatically rejected. From the menu "Remove Applied Software Products," answer *yes* to the question `Automatically remove DEPENDENT software?` From the command line, use the **-g** flag of **installp**.

Note that any software dependent on a product or 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 software since that action could change the currently active version of some product that you might prefer not to be altered. It is recommended that the automatic rejection of dependent software only be used when you are aware of what software will be rejected and have verified that you indeed wish to reject the entire list of dependents. 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.

Superseded Updates

For an installable option of a product, one update is said to supersede other updates for the same product option if it contains all the fixes for the superseded updates. An example is given below to help explain supersedes.

Consider ProductA which has separately installable options ProductA.option1, ProductA.option2, ProductA.option3, and ProductA.option4. ProductA at level 1.1.0.0 contains the following files for each option.

Option Name	Files
ProductA.option1	file_a, file_b, file_c
ProductA.option2	file_x, file_y
ProductA.option3	file_s, file_t
ProductA.option4	file_j, file_k

Two problems have been reported and fixed for this product. The first problem has been fixed with update U400010. The second problem has been fixed with update U400017. The following table shows the files that have been changed and distributed for each of the updates.

Option Name	Level	Updated Files
ProductA.option1	1.1.0.0.U400010	file_a, file_b
ProductA.option2	1.1.0.0.U400010	file_x
ProductA.option4	1.1.0.0.U400010	file_j
ProductA.option1	1.1.0.0.U400017	file_a
ProductA.option2	1.1.0.0.U400017	file_x, file_y
ProductA.option3	1.1.0.0.U400017	file_s
ProductA.option4	1.1.0.0.U400017	file_j

In the example given above, update U400017 for ProductA.option2 supersedes update U400010 for productA.option2. Also, for ProductA.option4 update U400017 supersedes update U400010 for ProductA.option4. Notice that the two updates do not have a supersede relationship for ProductA.option1. Update U400010 is a prerequisite for update U400017 for ProductA.option1, which means that for ProductA.option1 update U400010 must be installed before you will be allowed to install update U400017.

When you do an installation with the automatic inclusion of requisites, whenever an update that is not on the command line input list needs to be included to meet a requisite condition, the exact requisite will be included except under the following conditions:

- The requisite is already met by an update that supersedes the specified requisite.
- The specified requisite is not available on the installation medium but an update that supersedes the specified requisite is available on the medium.

When you do an installation where requisites are not automatically included, any updates that are included on the command line input are installed except under the following condition: When an update that supersedes the specified update is already installed on the system.

Software Inventory and the Software Vital Product Data

Information about the inventory of software products and product updates either installed or available to be installed on your system is maintained in the Software Vital Product Data (SWVPD) database. Information contained in the database includes the following:

- Name of the software product
- Level of the software product
- Names, checksums, and sizes of the files that make up an installed product
- Current state of the product

Database files for the Software Vital Product Data are stored in the following directories:

/etc/objrepos	Information about the root part of the product.
/usr/lib/objrepos	Information about the usr part of the product.
/usr/share/lib/objrepos	Information about the share part of the product.

For more information about the SWVPD, see the “Software Vital Product Data (SWVPD) Overview” in the *General Programming Concepts*.

The SMIT Software Inventory menus provide you with information about the software installed on your system. These menus use the **lslpp** and the **lppchk** commands. The **lslpp** command lists information about the software products and updates installed on a system. The **lppchk** command verifies information about the files of an installed software product.

Following are several examples of output from the **lslpp** command. The **lslpp** command displays useful information about the products and updates on your system, and this is just a small sampling of the information that can be obtained. You may find it useful to use this command from the command line as well as accessing it through the smit menus.

The following output is an example of a list of all products installed on a system. It was obtained with the SMIT menu List All Installed Software (command **lslpp -l**) on a system that had only the Base Operating System and the bosnet product installed.

Name	State	Description
Path: /usr/lib/objrepos		
bos.obj	COMMITTED	The Base Operating System
bosnet.ncs.obj	COMMITTED	Network Computing System
bosnet.nfs.obj	COMMITTED	Network File System/NIS/RPC Libs & Utils
bosnet.snmpd.obj	COMMITTED	Simple Network Management Protocol Daemon (Agent)
bosnet.tcpiip.obj	COMMITTED	TCPIP Applications
Path: /etc/objrepos		
bos.obj	COMMITTED	The Base Operating System
bosnet.ncs.obj	COMMITTED	Network Computing System
bosnet.nfs.obj	COMMITTED	Network File System/NIS/RPC Libs & Utils
bosnet.snmpd.obj	COMMITTED	Simple Network Management Protocol Daemon (Agent)
bosnet.tcpiip.obj	COMMITTED	TCPIP Applications

The following output is an example of a list of all updates installed on the system for the **bosnet.tcpiip.obj** product option. It was obtained using the SMIT menu List All Installed Software with **bosnet.tcpiip.obj** entered for the SOFTWARE name field on that menu (command **lspp -la bosnet.tcpiip.obj**).

Name	Fix Id	State	Description
Path: /usr/lib/objrepos			
bosnet.tcpiip.obj		COMMITTED	TCPIP Applications
	U400011	(U400012)	(Available on file)
	U400012	COMMITTED	(Available on file)
Path: /etc/objrepos			
bosnet.tcpiip.obj		COMMITTED	TCPIP Applications
	U400011	(U400012)	(Available on file)
	U400012	COMMITTED	(Available on file)

In the above example the notation of having the fix ID U400012 listed in parentheses under the State field for the update U400011 means that update U400012 supersedes update U400011 for the **bosnet.tcpiip.obj** product option. This means that update U400012 for **bosnet.tcpiip.obj** contains all the fixes that are in update U400011 for **bosnet.tcpiip.obj**.

The following output is an example of a list of the history information for the **bosnet.tcpiip.obj** product option. It was obtained using the SMIT menu Show History of a Software Product with **bosnet.tcpiip.obj** entered for the SOFTWARE name field on that menu (command **lspp -h bosnet.tcpiip.obj**).

```

Name
-----
  FixId   Release           Status   Action   Date       Time       User Name
-----
Path: /usr/lib/objrepos
bosnet.tcpip.obj
      03.02.0000.0000 COMPLETE COMMIT 11/15/91 10:40:08 root
U400011 03.02.0000.0000 NONE
U400012 03.02.0000.0000 COMPLETE COMMIT 11/15/91 11:11:38 root

Path: /etc/objrepos
bos.tcpip.obj
      03.02.0000.0000 COMPLETE COMMIT 11/15/91 10:40:09 root
U400011 03.02.0000.0000 NONE
U400012 03.02.0000.0000 COMPLETE COMMIT 11/15/91 11:11:38 root

```

Much of the output from the **lspp** command is understandable without an explanation. Other fields contain data that needs to be defined. The following paragraphs give a definition of terms used in several of the output fields.

The State field in **lspp** output gives the state of the product option on your system. It can have the following values.

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

The Action field in the **lspp** output identifies the installation action that was taken for the product option or update. The following values may be found in this field.

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

The Status field in the **lspp** output identifies the resultant status in the history of installation actions. The following values may be found in this field.

Status	Definition
PENDING	The option was successfully applied and is pending either commitment or rejection.
COMPLETE	The commitment of the option has completed successfully.
BROKEN	The product was left in a broken state after the specified action.
CANCELLED	The specified action was cancelled before it completed.
NONE	This option is available on an installation media, but no installation action has been attempted.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** and **chprreq** commands.

The Installing and Updating Optional Software in Version 3.2 (this is a subsection within the Installation Concepts) section in the introduction of this Installation Guide.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *General Concepts and Procedures* provides information on file system types and management.

IBM RISC System/6000 General Programming Concepts.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000.*

Using SMIT in *Getting Started: Managing the IBM RISC System/6000.*

IBM RISC System/6000 Problem Solving Guide.

ADVANCED PATH: Optional Software Installation

A. Determine Your Procedural Start Point

1. If you have not already logged in as root on the system you want to install onto, log in as root now.
2. If necessary, refer to section “E. Optional Software Installation and Update Concepts” beginning on page 6-20 and review the basic terms and concepts of optional software installation and updates. Then, return here and continue with step 3.
3. Do one of the following:
 - If you are installing from a network installation server, go to Advanced Path section “B. Preparation for Optional Installation over a Network.”
 - If you are installing a remote `/usr` client, go to Advanced Path section “C. Installing Software on a Remote `/usr` Client.”
 - If you are installing from tape, diskette, or a directory on your own system (for example, a preloaded system), go to Advanced Path section “D. Installation Procedure.”

B. Preparations for Optional Software Installation over a Network

If you installed BOS onto this system using the procedures in “Chapter 4. BOS Installation from a Network,” and you did not unmount the server’s installation directory after you finished, go to Advanced Path section “D. Installation Procedure.”

If you have never before used the network server to install software onto this client, you must complete the procedure in this Advanced Path section.

1. Enter `ls /usr/sys/inst.images` at the system prompt.
2. If the error message `The file /usr/sys/inst.images does not exist` is displayed, enter `mkdir -p /usr/sys/inst.images` at the system prompt.
3. Execute `smit mknfsmnt` and change the following:
 - `PATHNAME` of mount point `/usr/sys/inst.images`
 - `PATHNAME` of remote directory
 - `HOST` where remote directory resides.

C. Installing Software on a Remote `/usr` Client

1. Enter `smit ruinstallp` at the system prompt. Then execute the function.
- You have finished installing your `/usr` client and you are finished with this chapter.

D. Installation Procedure

1. Go to “Chapter 16. Planning” and complete the Optional Software Installation Plan.
2. If the Special Instructions section in “Chapter 17. Product Information” tells you to stop any processes, do so now.

Note: If this system is a diskless server, you must also stop processes on the diskless clients served by this server.
3. Execute `smit instupdt_instupdt` and select the appropriate INPUT device / directory for software. Next, select the software you want to install.

Installation of your software is now complete. Before you begin using your system you may wish to perform the procedures in “Chapter 8. Post-Installation Procedures.”

Chapter 7. Service Updates Installation

This chapter describes how to install corrective service updates. An update is a software fix that corrects a defect or adds an enhancement to BOS or an optional software product.

Note: The procedures in this chapter assume that you have already installed the software that will be updated. If you need to install the operating system or optional software products, you can locate the correct procedure in the chapter titled “Where Do I Go in This Manual?” on page 0-1 (immediately following the Table of Contents).

Update Packaging

There are three different ways you may receive corrective service updates:

- a. A *Selective Fix* is an update that corrects a specific problem that a customer may be experiencing. The intent is to update the minimum amount of software to correct the problem. Selective fixes are shipped to customers who report the specific problem that is corrected by the fix. A corrective service update will contain the actual correction and any other corrections that are related to the correction requested. More than one “correction” may be packaged into an update. Use the procedures in this chapter to install selective fixes.
- b. A *Preventive Maintenance Package* is a collection of corrective service updates that are issued periodically and shipped to all appropriate customers. Updates are selected for inclusion in the package based on the severity and pervasiveness of the problems they correct. This is a maintenance package that is intended to prevent the occurrence of problems for the average user. A Preventive Maintenance Package may also be a collection of updates that adds an enhancement to BOS or an optional software product.
- c. Updates may also be shipped with a software product on the product’s media. The updates may be added to the product’s media just before its initial release, or they may be added when a new version of the product is released. In this case, the product and its fixes are usually installed at the same time. This chapter should not be used for this type of installation. If you want to install products and updates simultaneously, you can locate the correct procedure in the chapter titled “Where Do I Go in This Manual?” on page 0-1 (immediately following the Table of Contents).

Update Documentation

It is important to carefully read the documentation that is shipped with your update. It contains valuable information that can help you with installation.

When an update is shipped to you, it is accompanied by the following documentation:

Cover Letter	Contains general information about the update.
Contents Listing	Lists the updates contained on the media (fix ID numbers), which product they fix (product name and version), the problem that is corrected by the fix (identified by an APAR number), and the number of diskettes or tapes that were shipped (volume numbers).
Special Instructions	This is optional. If included, it contains special instructions about the updates. For future reference, you should insert this page into “Chapter 17. Product Information” next to the pages for the product the update fixes.

Update Labels

The label on the update media should say "Corrective Service Update." It contains the following information describing the contents of the update media:

Descriptive Title	Identifies the type of update package you have received: a Selective Fix package or a Preventive Maintenance package.
PTF# (fix ID)	The term PTF means that it is a selective fix for a specific problem. If multiple updates were ordered, only the identification number for the first update will be listed.
PMR#	When you request a fix for a problem, your request is given a PMR number. This number helps you track the response to your request for a fix.
VOL	The volume number of the tape in relation to the total number of tapes shipped. For example, tape one of a two tape set would read: VOL: 01 of 02.
CUST	The customer name.
CUST#	The identification number of the customer.
Date	The date the corrective service update tape was made.
Usage Message	Describes what version must be running to install the software on the tape. <i>The updates on the tape can only be installed on the listed versions.</i>
COER#	An internal tracking number.

Committing or Rejecting Updates

When you install updates on your system, the default is for the system to save the previous version of the software being updated in case you do not like the changes the update makes to the software. This allows you to return to using the previous version by *rejecting* the update. When you *reject* an update, the updated version is deleted from the system and the previous version becomes the active version of the software.

Conversely, if you decide that you prefer the updated version, you can delete the previous version to recover the disk space that was used to store the previous versions. All previous versions are removed when you *commit* (make a commitment to) the updated version. Note that when you install an update, you can tell the system to *commit* the new version during the installation process. But this is not recommended unless you simply don't have enough disk space to install the update without removing the previous version.

However, after you have been using an updated version for some time and you are sure that you want to keep using it, you should commit it. This makes it faster and easier to reject 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.

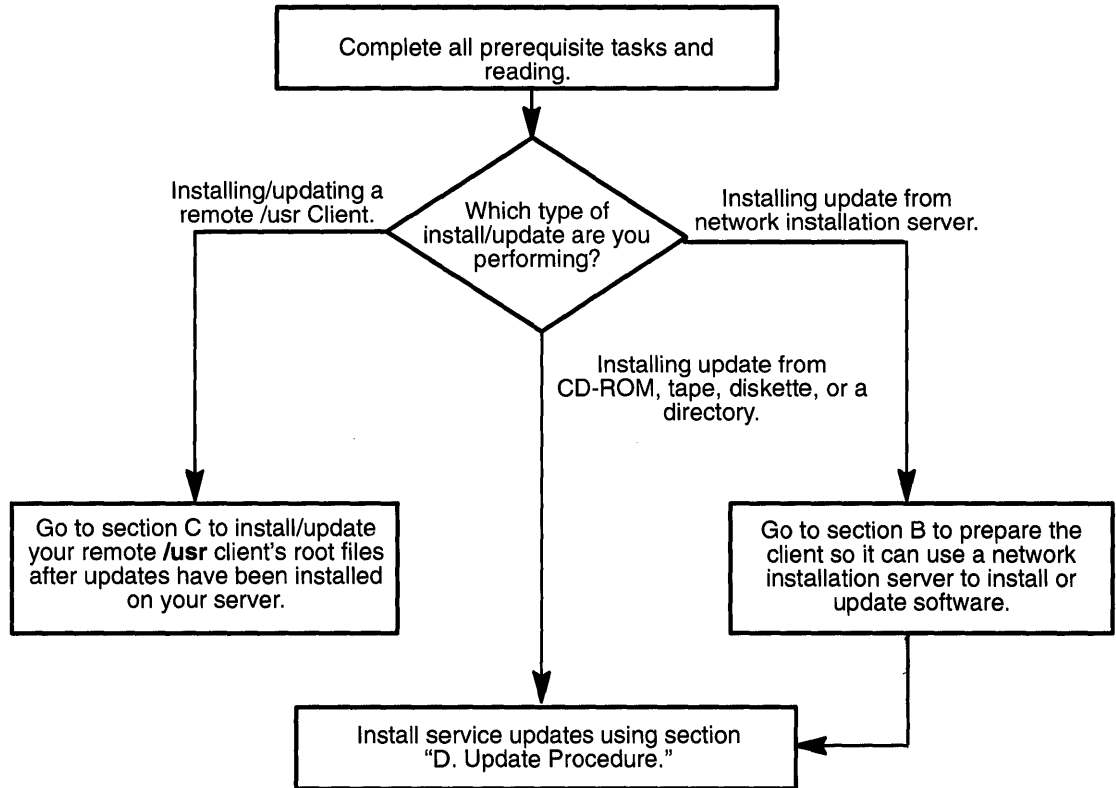
If you need more detailed information on commit and reject, refer section "E. Optional Software Installation and Update Concepts," in "Chapter 6. Optional Software Installation."



Note: The procedures in this chapter are for use on standard workstations. If you want to install updates onto a diskless server, you should go now to "Chapter 10. Diskless System Installation."

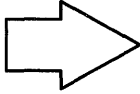
Flowchart for Service Updates Installation

This flowchart outlines the basic steps you must perform to install service updates.

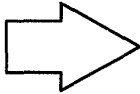
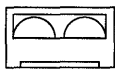


Prerequisite Tasks or Conditions

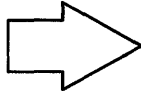
1. The Version 3.2 Base Operating System (BOS) is installed.
2. If this is a fix for an optional software product, the product should already be installed.
3. One of the following sources of software updates is available:



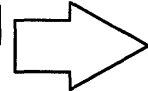
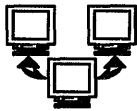
Do the following only if you are installing from CD-ROM: Find the CD-ROM that contains the service updates that you want to install.



Do the following only if you are installing from tapes: Find the tapes that contain the service updates that you want to install.

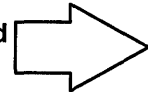


Do the following only if you are installing from diskettes: Find the diskettes that contain the service updates that you want to install.



If you are installing from a network installation server, the server must have already been created. If you need to create an installation server, refer to “Chapter 9. Creating an Installation Server.”

**Preloaded
Directory**



Your system must have been preloaded with your optional software at the factory or you must have loaded a directory yourself.

4. You should be familiar with the basic operations of your system’s hardware. If you are not familiar with your hardware, read “Chapter 18. Hardware Basics,” then return here and continue with step 5.
5. In this chapter you will be using the System Management Interface Tool (SMIT) to install optional software. If you are not familiar with SMIT, read “Chapter 19. SMIT Basics,” then return here and continue with step 6.
6. Before you install updates on your system, you may want to create a backup of your system. If you do, use the procedures in “Chapter 15. Backing Up Your System” and then return here and continue with the next section, “Procedural Overview.”

Procedural Overview

During the procedure in this chapter, you will be performing the following steps:

- A . Determine Your Procedural Start Point
- B . Preparations for Optional Software Updates over a Network
- C . Updating Software on a Remote **/usr** Client
- D . Update Procedure
- E . Commit Software
- F . Reject Updates

Continue with the next section when you are ready to begin the installation.

A. Determine Your Procedural Start Point

1. Are you updating software?
 - YES: I'm updating software. Go to question 3.
 - NO: I'm committing or rejecting software. Go to question 2.
2. Are you committing software?
 - YES: I'm committing software. Go to "E. Commit Software" on page 7-22.
 - NO: I'm rejecting updates. Go to "F. Reject Updates" on page 7-27.
3. Are you using a CD-ROM, tapes, diskettes, or a directory to update your software?
 - YES: I'm using a CD-ROM, tapes, diskettes, or a directory. Go to section "D. Update Procedure" on page 7-10.
 - NO: I'm not using a CD-ROM, tapes, diskettes, or a directory. Go to question 4.
4. Are you using a network installation server to update your software?
 - YES: I'm using a network installation server. Go to section "B. Preparations for Optional Software Updates over a Network."
 - NO: I'm updating a remote **/usr** client. Go to section "C. Updating Software on a Remote **/usr** Client" on page 7-8.

B. Preparations for Optional Software Updates over a Network

If your machine uses an installation server as the source of the software you want to install, your machine is called a *client* of that server.

If you have never before used the network server to install software onto this client, you must complete the procedure in this section. This section describes how to prepare a client so that it can use a network installation server to install or update software.

If you have already completed this procedure, go to the section titled “D. Update Procedure” beginning on page 7-10.

Note: The following procedures assume that the `/inst.images/risc_sys6000/3.2` directory on the server was used to store the software. If a different directory was used, you should use that directory’s name in step 7 of this procedure.

This procedure describes how to create the mount point on the client and then mount via NFS the file system from the server that holds the installation and update images.

1. If you have not already logged in as root on the system you want to install onto, log in as root now.
2. TCP/IP and NFS must already be installed and configured on your client. Refer to “Chapter 6. Optional Software Installation” if you need to install TCP/IP and NFS, and refer to “Chapter 14. Network Configuration” if you need to configure TCP/IP and NFS.
3. On the client machine where you want to install the software, type the following:

```
ls /usr/sys/inst.images
```

and press Enter.

If the error message `The file /usr/sys/inst.images does not exist` is displayed, continue with step 4.

If the error message does not appear, skip to step 5 on page 7-6.

4. Type the following:

```
mkdir -p /usr/sys/inst.images
```

and press Enter.

5. On the client, type the following:

```
smit mknfsmnt (or type smit -C mknfsmnt if you are working in AIXwindows)
```

and press Enter.

6. `PATHNAME` of mount point is highlighted.

Note: Do *not* press Enter until you get to step 9.

Type the following:

```
/usr/sys/inst.images
```

7. Move the cursor to `PATHNAME` of remote directory.

Type the name of the directory on the server that holds the installation and update images.

For example, if the installation server was created using the suggested directory name, you would type:

```
/inst.images/risc_sys6000/3.2
```

8. Move the cursor to `HOST` where `remote directory` resides.

Type the name of the installation server that contains the service update images.

9. To mount the remote file system, press Enter.

10. Press F10 to exit SMIT.

You are ready to begin the update procedure. Remember that when you are asked to select the INPUT device/directory for software, you should select `/usr/sys/inst.images`.

Go to section "D. Update Procedure" on page 7-10.

C. Updating Software on a Remote /usr Client

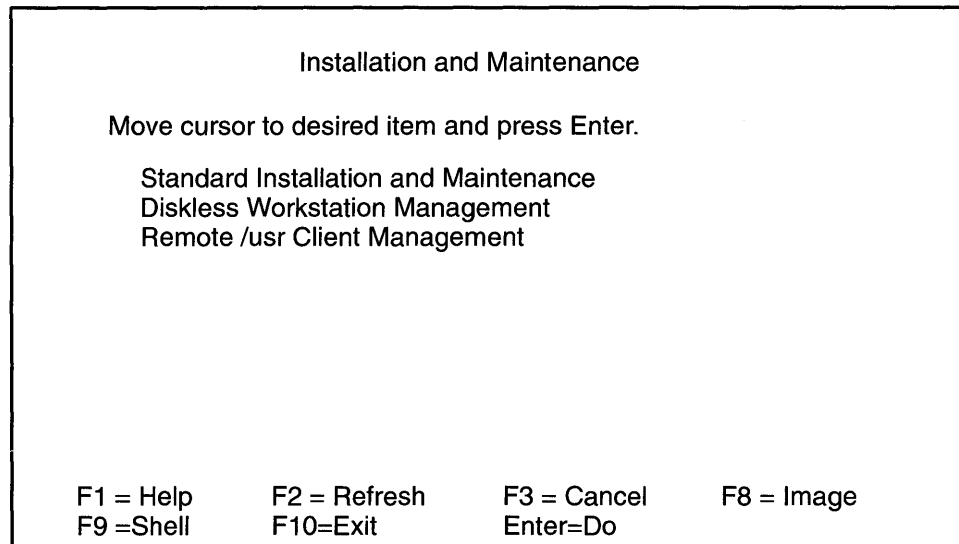
The following procedure is used to install/update your remote **/usr** client's root files after new products or updates have been installed on your **/usr** server. This procedure does not need to be run when BOS is installed on a remote **/usr** client. However, this procedure should be run on each remote **/usr** client of the **/usr** server after new products or updates with root parts are installed on the **/usr** server. When software has been updated on the remote **/usr** server, it is very important that this procedure be run on the client *before* your client system is booted (started). If this is not done, you may not be able to successfully boot your client machine, depending on the software that was updated. You do not need to know the names of software that has been added or updated in **/usr** on the server. The process will automatically run for all products and updates installed in the server's **/usr** filesystem.

1. If you have not already logged in as root on your remote **/usr** client machine, log in as root now.
2. At the system prompt, type:

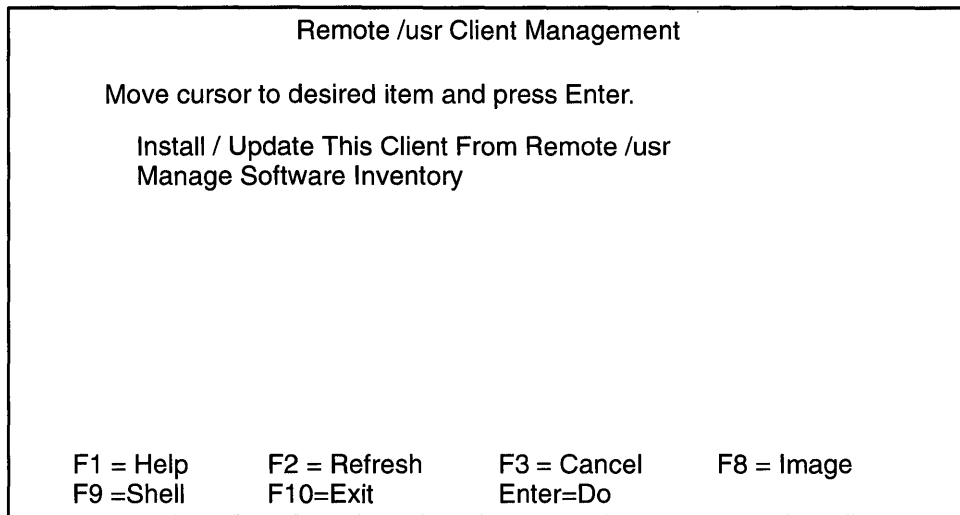
```
smit install (or type smit -C install if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:



3. Move the cursor to `Remote /usr Client Management` and press **Enter**.
A screen similar to the following is displayed:



4. `Install / Update This Client From Remote /usr` is highlighted. Press **Enter**.
5. A **Command Status** screen appears. When the `Command: status` indicator changes to `OK`, press **F10** to exit **SMIT**.

Note: If no new software with root parts has been installed on your server since the last time you ran this command, you may see two messages displayed. The messages state that no software products were found and that no valid products were left to process. These messages are just indicating that you did not need to perform this procedure and that you can now exit **SMIT**.

6. If your `/usr` server administrator told you to reboot your system after you completed this procedure, do so now.

You have finished updating your remote `/usr` client and you are finished with this chapter.

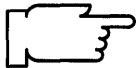
D. Update Procedure

Note: The procedures in this chapter are for use on standard workstations. If you want to update a diskless server, you should *instead* go to “Chapter 10. Diskless System Installation.”

1. If you have not already logged in as root, log in as root now.
2. Go to “Chapter 17. Product Information” and read the product information for the products that you are fixing. If there are any processes that must be stopped when the product is installed, they must also be stopped before the product is updated. If there are any special installation instructions for the product, these instructions may also have to be followed when updating the product. When you have finished reading the product information, return here and continue with step 3.
3. If the documentation that came with the update or the Special Instructions section in “Chapter 17. Product Information” instructs you to stop any process, do so now.
4. Are you installing from CD-ROM?

NO: Go to step 5.

YES: Read the following warning and, if necessary, perform the following procedure:



Warning: If you are accessing InfoExplorer from your CD-ROM (as described in “Chapter 13. Mounting the InfoExplorer CD-ROM”) and you want to install optional software from the same CD-ROM drive, you must first perform the following procedures before you invoke SMIT:

- a. Type the following:

```
umount /usr/lpp/info/Language (where Language is the name  
of the language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
- c. Place the CD-ROM that contains the optional software into a disc caddy, and insert the caddy into the CD-ROM drive.

During the installation, SMIT will create and mount a temporary mount point for the CD-ROM drive.

5. If you are using CD-ROM, tapes, or diskettes, insert the CD-ROM (in a caddy), tape, or diskette that contains your updates into the drive.

6. At the system prompt, type:

`smit sininstallp` (or type `smit -C sininstallp` if you are working in AIXwindows)

and press Enter.

A screen similar to the following is displayed:

Software Installation & Maintenance

Move cursor to desired item and press Enter.

- Install / Update Software
- List All Software on Installation Media
- List All Problems Fixed by Software on Installation Media
- List All Applied but Not Committed Software
- Commit Applied Software (Remove Previous Version)
- Reject Applied Updates (Use Previous Version)
- Remove Applied Software Products
- Copy Software to Hard Disk for Future Installation
- Clean Up After a Failed Installation

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

7. Select **Install / Update Software**, and press Enter.

A screen similar to the following is displayed:

Install / Update Software

Move cursor to desired item and press Enter.

- Install Software With Updates
- Install Software Without Updates
- Install Updates Only

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

8. Select **Install Updates Only**, and press Enter.

A screen similar to the following is displayed:

```

                                Install Updates Only

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

* INPUT device / directory for software      [Entry Fields]
                                             [ ]      +

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

```

9. Press F4 to generate a list of installation device file names.

A screen similar to the following is displayed:

```

                                Install Updates Only

Type or select a value for the entry field.

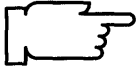
                                INPUT device / directory for software
Move cursor to desired item and press Enter.
/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
/dev/rmt0.1 (2.3 GB 8mm Tape Drive)
/dev/rmt1.1 (150 MB 1/4-inch tape drive)
/dev/fd0 (Diskette Drive)
/usr/sys/inst.images
/usr/sys/inst.images/bosadt
/usr/sys/inst.images/bosadt.data

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

```

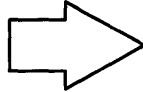
In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

If you select the `/dev/cd0` device, SMIT uses the `/mnt/cd` directory as the input device. If you select the `/dev/cd1` device, SMIT does special processing to create and temporarily mount a CD-ROM file system for the drive, and then it uses the temporary mount point as the input device.

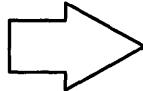


Note: When installing with a CD-ROM device using **installp** on the command line, the CD-ROM device must be mounted on a CDRom file system before the command can be issued. The input device / directory (**-d** flag) for the **installp** command must be the directory on which the CD-ROM is mounted.

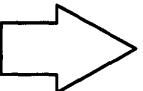
10. Move the cursor to highlight the device or directory you are installing from.



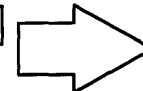
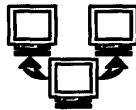
Select the name of the CD-ROM drive you inserted the CD-ROM into.



Select the name of the tape drive you inserted the software tape into.

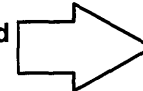


Select the name of the diskette drive where you inserted your first diskette.



Select **/usr/sys/inst.images**.

**Preloaded
Directory**



Select **/usr/sys/inst.images**.

After you have highlighted your choice, press Enter.

A screen similar to the following is displayed:

Install Updates Only			
Type or select values in entry fields.			
Press Enter AFTER making all desired changes			[Entry Fields]
* INPUT device / directory for software	/dev/rmt0.1		+
* SOFTWARE to install	[all]		
Automatically install PREREQUISITE software?	no		+
COMMIT software?	no		+
SAVE replaced files?	yes		+
VERIFY software?	no		+
EXTEND file systems if space needed?	yes		+
REMOVE input file after installation?	no		+
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7 = Edit	F8 = Image
F9 = Shell	F10 = Exit	Enter = Do	

11. Move the cursor to the entry field for `SOFTWARE` to `install`. In this field you tell the system the names of the updates you want to install.

You have two ways to use this field:

- The default setting, "all," tells the system that you want to install *all* of the updates that are on the specified `INPUT` device. If you want to install *all* of the updates on the update media, go to step 15.
- You can manually select *some* of the updates. To see the list of the names of the updates available from the selected input device or directory, press `F4` and then continue with step 12.

12. After several minutes, a screen similar to the following is displayed:

```

                                SOFTWARE to install
Move cursor to desired item and press F7.
  ONE OR MORE items can be selected.
Press Enter AFTER making all selections.
# Option Name                      Level                      I/U Q Content
#=====
# bosnet.all
#   Description: Will include ALL the images for bosnet.
#
# bosnet.tcpip.obj                  03.02.0000.0000.U400524   S N  usr, root
#   TCPIP Applications.
#
# bos.obj                            03.02.0000.0000.U402032   M N  usr
#   Required for Diskless clients/servers.
#
#

F1 = Help          F2 = Refresh      F3 = Cancel
F7 = Edit          F8 = Image        F10 = Exit
Enter=Do
```

Note: The contents of this list will vary according to what updates are on the input device you specify. The example above shows two selective fixes: One to fix TCPIP, and one that is a Preventive Maintenance Package (M) to fix diskless clients and servers. For Preventive Maintenance Packages that are enhancements, the line below the update name describes the enhanced software function or support for new hardware.

13. This list displays the names of the updates you can select for installation. Read the rest of this step for an explanation of the contents of this screen. When you are ready to begin making selections from the list, go to the procedures in step 16.

The following headings describe the contents of this list:

Option Name Specifies the name of the software product option that can be selected for installation. The first part of the name (up to the first period) is an abbreviation for the software product. The second part is an abbreviation for an option within that software product. For example, **bosnet.tcpip.obj** is the name for the TCP/IP Applications option (tcpip) that is inside the BOS Network Facilities product (bosnet). For a complete listing of software products and their option names, refer to "Chapter 17. Product Information."

Note: When the list is displayed, you will see that the first entry for each software product is xxx.all, where xxx is the specific software product name. If you select xxx.all for installation, then all of the options that start with the name xxx will be installed. In other words, all of the options listed after the xxx.all and up to the next software product will be installed automatically. For example, to install all of the BOS Network Facilities options, select **bosnet.all**. This will install all of the options that start with the name **bosnet**.

Level Specifies the code level number for this software update. The last field, which starts with the letter "U4" for product updates is the fix ID that identifies the update.

I/U Specifies whether the option is part of an installation package (I) or is part of an update package (G, S, or M). An update is software that fixes a defect in the product. There are three types of updates:

G Updates that are a part of the initial release of the product. Software products may not execute properly if G updates are not installed with the product.

S A Selective Fix. An update that fixes a specific defect in a product or contains a specific improvement for a product.

M A Preventive Maintenance package. This is a collection of fixes and/or improvements.

Q Represents quiescent or quiet. Y (yes) indicates that some software processes must be stopped before installing this option. N (no) indicates that it is not necessary to stop any software processes before installing this option. This indicator only tells you whether or not software processes need to be stopped. It does not indicate whether or not they are currently stopped. For a list of the processes that must be stopped, refer to "Chapter 17. Product Information."

Content Specifies where the files for the option will be installed: the root (/), the /usr, or the /usr/share directories.

Description Describes the contents of the software product option.

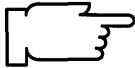
If there are several updates on the media, the update listing may continue for several screens. The field headings only display on the first screen. They do not display on subsequent screens. However, you can scroll back to the first screen to view them.

14. Scroll through the list of updates using the PageUp/PageDown keys, or the arrow cursor keys, to find the first update you want to select.

- a. When the update you want to install is highlighted, press F7 to select it. The > (greater than) symbol appears next to each update that you select to indicate that it is selected for installation. You may select as many updates as you want to install. To deselect a previously selected update, move the cursor to highlight that item and press F7.

Note: If you select a **xxx.all** option, a selection marker (>) will appear next to xxx.all, but no markers will appear next to the updates covered by that xxx.all. By selecting the **xxx.all** option, all of the updates with the same product name (the product name xxx) will be installed, even though they are not visibly marked.

- b. Continue scrolling through the list selecting all of the updates you want to install.
- c. When you have finished selecting, scroll through the list again and double check that your selections are correct.



Note: If you exit this list and return to it again, then the list will be cleared of all previous selections. All your previous selections will be lost and you will have to start over and reselect the options.

- d. When you are sure that your selections are correct, press Enter.

A screen similar to the following is displayed:

Install Updates Only			
Type or select values in entry fields.			
Press Enter AFTER making all desired changes			[Entry Fields]
* INPUT device / directory	/dev/rmt0.1		+
* SOFTWARE to install	[bosnet.all	>	
Automatically install PREREQUISITE software?	no		+
COMMIT software?	no		+
SAVE replaced files?	yes		+
VERIFY software?	no		+
EXTEND file systems if space needed?	yes		+
REMOVE input file after installation?	no		+
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

15. The system automatically enters the default values for the remaining entry fields. Read the information in the following table on the next page to determine if you want to use the default settings.

If you want to change the settings, move the cursor to the field and use the Tab key to toggle `yes` or `no`.



Note: If you leave the `Automatically install PREREQUISITE software?` option set to `no`, you must search the Command Status screen messages after the installation command completes to see if any installations failed due to missing prerequisites. *You should do this even if the `Command: status prompt` displays `OK` upon completion.*

If there are missing prerequisite software, look at the list of prerequisite software that is displayed in the Command Status screen messages. If you still want to install the update, set the `Automatically install PREREQUISITE software?` option to `yes` and rerun the installation process for the software that failed to install.

If you have limited disk space, you may want to leave the `Automatically install PREREQUISITE software?` option set to `no` so that you can see the list of prerequisite software *before* they are installed. Then, you can decide whether you have sufficient disk space to install the update and all of its prerequisite software.



CAUTION: If you answer `yes` to the `Automatically install PREREQUISITE software?` option, *and* if you have chosen to install any updates for products that are not currently installed on your system, then the base level of those products will get installed on your system when they exist on the installation media even though you are running this from the “Install Updates Only” menu. The reason for this is because the `-g` flag, which causes the automatic inclusion of requisites, takes precedence over the `-B` flag, which causes the installation to be limited to updates only. Therefore, if both products and updates exist on the installation media, you should take special care when responding to the `Software to install` option if you intend to answer `yes` to the `Automatically install PREREQUISITE software?` option. In this case, it is recommended that you do not enter an all response to the `Software to install` option.

Entry Field	Yes	No
Automatically install PREREQUISITE software?	Automatically installs any software that is a prerequisite for the updates you choose to install.	(Default) Does <i>not</i> automatically install software that is a prerequisite for the updates you choose to install. If the system encounters a missing prerequisite for an update, the installation of that option fails and the system lists the required prerequisites.
COMMIT software?	Commits all of the updates you choose to install.	(Default) Applies all of the updates you choose to install, but does not commit them. When software is applied to the system, it becomes the active version of the software.
SAVE replaced files?	(Default) Saves existing copies (if any) of the software you are installing until the software is committed. In case of a failed installation, the cleanup procedure is used to retrieve software.	Does <i>not</i> save existing copies of the software you are installing. In case of a failed installation, the cleanup procedure cannot retrieve software. You must reinstall.
VERIFY software?	Instructs the system to perform a checksum in addition to the basic verification of files.	(Default) Instructs the system to <i>not</i> perform a checksum. Only a basic verification will be done. The checksum process can add a significant amount of time to the installation process.
EXTEND file systems if space needed?	(Default) Extends file systems if space is needed to install software. Note: Once a file system is extended, it cannot be contracted. It must be deleted to retrieve space.	Does <i>not</i> extend file systems to meet the space requirements of the software you are installing.
REMOVE input file after installation?	(This option is only valid if you are installing from a file or directory on your system. If you are installing from tape, diskette, or network, choose the default, no.) Deletes the installation image files of the software products you are installing after installation is complete. An installation image file contains a copy (in backup format) of the software that you are installing and other files the system uses for installation. If you want to recover hard disk space, choose <i>yes</i> . Note: If Automatically install PREREQUISITE software? is set to <i>yes</i> , prerequisite software will also be removed.	(Default) Does <i>not</i> delete the installation image files of the software products that you are installing.

16. When you are satisfied with all the settings on this screen, press Enter to begin installing the updates.

A screen similar to the following is displayed:

ARE YOU SURE?

Continuing may delete information you may want to keep. This is your last chance to stop before continuing.

Press Enter to continue.
Press Cancel to return to the application.

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

17. If you are ready to begin installing, press Enter.

If you are not ready to begin installing, press F3 and return to step 11 on page 7-14.

A screen similar to the following is displayed:

COMMAND STATUS

Command: running stdout: no stderr: no

Before command completion, additional instructions may appear below.

A series of messages will appear as the installation process proceeds. The amount of time the installation process takes will vary according to the amount of software you are installing and the type of system that you have.

Note: During the installation process, the system may prompt you to insert the next tape or diskette by displaying a message similar to the following:

```
Mount volume 2 on /dev/rmt0.
```

```
Press the Enter key to continue.
```

When this message appears, insert the specified tape or diskette into the input device and press Enter.

When the installation process finishes running, the `Command: status` indicator in the upper left corner of the screen will change from `running` to `OK` or `failed`. `OK` means that the installation process ran to completion (even though some options may not have installed successfully). `failed` means that the installation process did not complete.

Note: For a more detailed discussion of this screen, refer to section “E. Error Messages and Output from the `installp` Command” in “Chapter 6. Optional Software Installation.”

18. When the installation process halts or finishes, the screen returns to the top of the list of messages that were generated during installation.
19. Search the message list to find any error messages that may have been produced or any updates that may not have been successfully installed during the installation process. Use the following function keys to review the system message list:
 - Home displays the start of the message list.
 - End displays the bottom line of text.
 - Page Down displays the next screen of text.
 - Page Up displays the previous screen of text.
 - The up and down arrow keys move through the message list line by line.
- a. Use the message list to determine if there were any problems during installation and which updates were involved. For example, space limitations may have been exceeded or prerequisites may not have been selected for some of the updates that you chose to install. The system would list how much extra space was needed or what additional software must be installed as prerequisites.
- b. If you have identified a problem with installing a particular update, you are only required to reinstall the update that was marked `FAILED` or was missing from the “`Installp` Summary” report. You should also select any prerequisites that may have been missed the first time. You do not need to reinstall the updates that were marked `SUCCESS` in the summary report. If you need to perform the update again, remove any tape or diskette from the drive, press F10 to exit SMIT, and return to step 3 on page 7-10 with the necessary corrections.
- c. If the installation was interrupted for any reason (for example, a power failure), you may need to use the cleanup procedure before continuing. Press F10 to exit SMIT and refer to the section called “Cleanup Procedure for Failed Optional Software Installations” on page 21-10.
- d. When all of your updates have been installed successfully, continue with step 20.

20. If you are using diskettes and you have additional software updates to apply, remove the diskette, insert the first diskette of the software update you want to apply, press F3, and return to step 11 on page 7-14. Otherwise continue with step 21.

21. Press F10 to exit SMIT.

22. If you are using CD-ROM, tape or diskettes, eject the CD-ROM, tape or diskette from the drive.

23. If the machine you have just updated is a **/usr** server, you must notify your client machines operators that they should immediately update their machines using the section "C. Updating Software on a Remote /usr Client" on page 7-8.

24. If the documentation that came with the updates instructed you to reboot the system you are updating, reboot this system now.



Note: If the machine you have just updated is a **/usr** server, you must reboot all of the **/usr** clients of this server after completing section "C. Updating Software on a Remote /usr Client."

Installation of your updates is now complete. However, there are two other things you may want to do before you begin using your system:

- The updates you just installed may have contained new README files with late-breaking news about the software. To look for these files, go to "Chapter 12. Viewing README Files."
- You may want to create a new backup of your system. If you do, refer to the procedures in "Chapter 15. Backing Up Your System."

E. Commit Software

If you decide that you prefer the updated version of your software, you can *commit* to the update. This deletes the previous version of the updated software and recovers the disk space that was used to store the previous versions. All previous versions are removed when you *commit* (make a commitment to) the updated version. Note that when you install an update, you can tell the system to *commit* the new version during the installation process. But this is not recommended since you don't get the opportunity to test the new update before the previous version is deleted. Use this technique only if you don't have enough disk space to install the update without removing the previous version.

To commit an update, use the following procedure:

1. If you are not already logged in as root, log in as root now.
2. Do you know the update (fix) identification number of the update you want to commit?

YES: Go to step 4 on page 7-24.

NO: Continue with step 3.

3. The update (fix) ID is listed on the paper documentation that came with the update.

If you have that documentation, go to step 4 on page 7-24.

If you do not have that documentation, use the following steps to find the update (fix) ID.

- a. Type the following:

```
smit lslpp_listupdt      (or type smit -C lslpp_listupdt if you are
                        working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

List All Updates to a Software Product

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* SOFTWARE name	[Entry Fields]	
Show FULL update information?	[all]	+
	no	+

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

- b. SOFTWARE name is highlighted. Press F4 to list the software products.
A screen similar to the following is displayed:

```

List All Updates to a Software Product

                SOFTWARE name
Type          Move cursor to desired item and press F7.
Pre          ONE OR MORE items can be selected.
            Press Enter AFTER making all selections.
* S          [TOP]
S           # Name                State      Description
            #_____          _____
            #Path: /usr/lib/objrepos
            bos.obj              COMMIT    The Base Operating System
            #
            bsmEn_US.msg        APPLIED  Base System Messages
F1          [MORE...9]
F5          F1 = Help            F2 = Refresh      F3 = Cancel
F9          F7 = Select          F8 = Image        F10 =Exit
            Enter=Do
  
```

- c. Move the cursor to highlight the software product that was updated by the update you want to reject. Press F7 to select it, and then press Enter.
- d. The List All Updates to a Software Product screen reappears. Move the cursor to highlight Show FULL update information?. Press the tab key to change the default to yes.
- e. Press Enter. A Command Status screen similar to the following is displayed:

```

COMMAND STATUS

Command: OK          stdout: yes          stderr: no

Before command completion, additional instructions may appear below

  Name      Fix ID      State      Fix Information
  _____  _____  _____  _____
Path: /usr/lib/objrepos
bos.obj          COMMITTED NONE
                U40192  APPLIED  XI24355 Service IPL Hangs (888)
                U40193  APPLIED  XI25645 Corrects Printer Device
                Configuration
Path: /etc/objrepos
bos.obj          COMMITTED NONE

F1= Help      F2= Refresh    F3= Cancel    F6=Command
F8=Image      F9=Shell       F10=Exit
  
```

- f. Wait for the `Command: status` indicator to change to `OK`.
- g. Look at the `Fix Information` column on the screen.

Use the Up/Down arrow keys or the Page Up and Page Down keys to scroll through the list. When you find the update you want to reject, write its number from the `Fix ID` column down and continue with the step h.

- h. Press `F10` to exit `SMIT`.

4. Type the following:

```
smit instupdt_commit (or type smit -C instupdt_commit if you are
                    working in AIXwindows)
```

and press `Enter`.

A screen similar to the following is displayed:

Commit Applied Software (Remove Previous Version)

Type or select values in entry fields.
Press `Enter` AFTER making all desired changes.

	[Entry Fields]	
* SOFTWARE name	[all]	+
COMMIT older version if above version uses it?	yes	+
EXTEND file systems if space needed?	yes	+

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

5. SOFTWARE name is highlighted. Press F4 to list the software that has not already been committed.

A screen similar to the following is displayed:

Commit Applied Software (Remove Previous Version)

SOFTWARE name

Move cursor to desired item and press F7.
 ONE OR MORE items can be selected.
 Press Enter AFTER making all selections.

[TOP]

# Name	Level
#	
bos.obj	03.02.0000.0000.U401962
bos.obj	03.02.0000.0000.U401963
bos.obj	03.02.0000.0000.U401968
[MORE...9]	

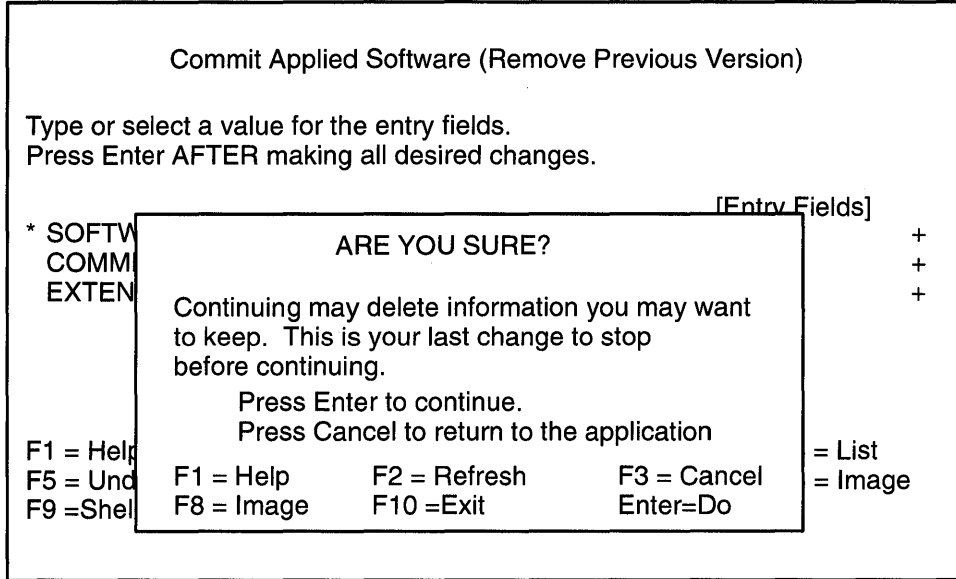
F1 F1 = Help	F2 = Refresh	F3 = Cancel
F5 F7 = Select	F8 = Image	F10 =Exit
F9 Enter=Do		

The Name column shows the name of the software that was updated. The Level column lists the updates and identifies them by listing their identification (ID) number. The ID is the number after the last decimal point in the level number. For updates shipped by IBM, this number starts with "U4". In the example, the first update in the list updates the product bos.obj (level 3.02) and its ID number is U401962.

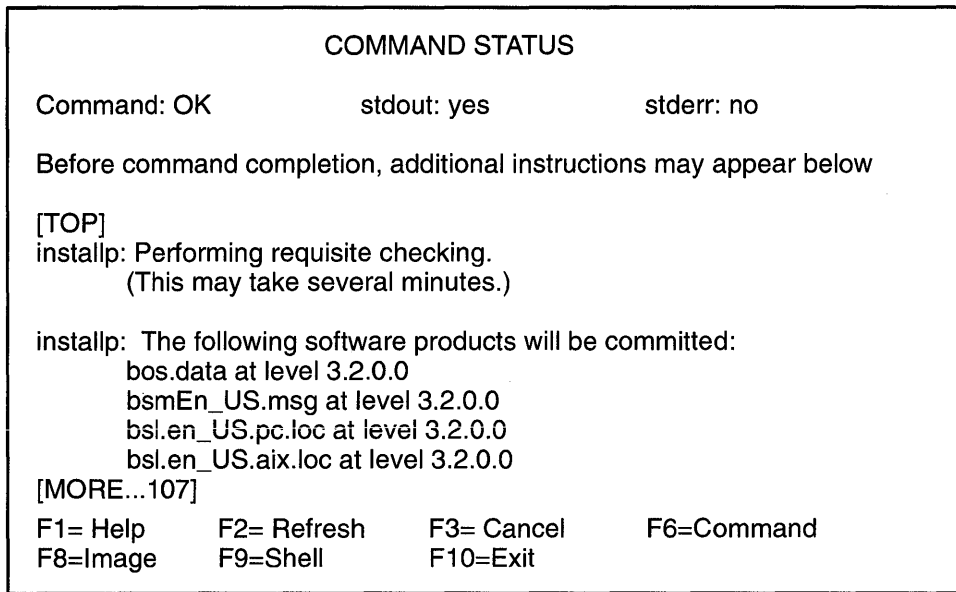
6. Move the cursor to highlight the software you want to commit. When the software you want to commit is highlighted, press F7 to select it. The > (greater than) symbol appears next to each item you select to indicate that it will be committed. To deselect a previously selected item, move the cursor to highlight the item and press F7.

When you are sure that your selections are correct, press Enter. The Commit Applied Software screen reappears.

7. To commit the software, press Enter. A screen similar to the following is displayed:



8. Press Enter again. A Command Status screen similar to the following is displayed:



9. When the Command status indicator changes to OK, press F10 to exit SMIT.

10. You are finished with the commit procedure.

If you now need to install updates onto a *standard* system, go to the beginning of Chapter 7. If you are installing onto a *diskless* system, go to Chapter 10, Part 3. Install and Update Optional Software on page 10–37.

F. Reject Updates

When you install updates on your system, the default is for the system to save the previous version of the software being updated in case you do not like the changes the update makes to the software. This allows you to return to using the previous version by “rejecting” the update. When you “reject” an update, the updated version is deleted from the system and the previous version becomes the active version of the software.

To reject an updated version of your software, use the following procedure:

1. If you are not already logged in as root, log in as root now.
2. Do you know the update (fix) identification number (ID) of the update you want to reject?

YES: Go to step 4 on page 7-29.

NO: Continue with step 3.

3. The update (fix) ID is listed on the paper documentation that came with the update.

If you have that documentation, go to step 4 on page 7-29.

If you do not have that documentation, use the following steps to find the update (fix) ID.

- a. Type the following:

```
smit lslpp_listupdt (or type smit -C lslpp_listupdt if you are
                    working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

List All Updates to a Software Product			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
* SOFTWARE name	[all]	[Entry Fields]	+
Show FULL update information?	no		+
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

- b. SOFTWARE name is highlighted. Press F4 to list the software products.

A screen similar to the following is displayed:

```

List All Updates to a Software Product

                SOFTWARE name
Type          Move cursor to desired item and press F7.
Pre          ONE OR MORE items can be selected.
            Press Enter AFTER making all selections.
* S          [TOP]
S           # Name                State      Description
            #_____
            #Path: /usr/lib/objrepos
            bos.obj             COMMITTED The Base Operating System
            #
            bsmEn_US.msg       APPLIED   Base System Messages
F1          [MORE...9]
F5          F1 = Help           F2 = Refresh      F3 = Cancel
F9          F7 = Select         F8 = Image        F10 =Exit
            Enter=Do
  
```

- c. Move the cursor to highlight the software product that was updated by the update you want to reject. Press F7 to select it, and then press Enter.
- d. The List All Updates to a Software Product screen reappears. Move the cursor to highlight Show FULL update information?. Press the tab key to change the default to yes.
- e. Press Enter. A Command Status screen similar to the following is displayed:

```

COMMAND STATUS

Command: OK          stdout: yes          stderr: no

Before command completion, additional instructions may appear below

  Name      Fix ID      State      Fix Information
  _____
Path: /usr/lib/objrepos
  bos.obj   U40192   APPLIED   X124355 Service IPL Hangs (888)
           U40193   APPLIED   X125645 Corrects Printer Device
                               Configuration
Path: /etc/objrepos
  bos.obj   COMMITTED NONE

F1= Help      F2= Refresh      F3= Cancel      F6=Command
F8=Image      F9=Shell         F10=Exit
  
```

- f. Wait for the `Command: status` indicator to change to `OK`.
 - g. Look at the `Fix Information` column on the screen.
Use the Up/Down arrow keys or the Page Up and Page Down keys to scroll through the list. When you find the update you want to reject, write its number from the `Fix ID` column down and continue with the step h.
 - h. Press F10 to exit SMIT.
4. A prerequisite is a separate piece of software that must be installed before a specific update can be installed. A prerequisite can be a software product or it can be another update. When you are rejecting an update, you can recover additional disk space by removing any prerequisite software that was installed with the update *as long as that software is not also required by other software installed on your system*. Use the following procedure to find prerequisites you can reject.

Note: To reject a Preventive Maintenance Package (a collection of updates), you must manually select each of the prerequisites in that package. If you select just the ID number listed with the package name, NONE of the updates in the package will be rejected. See item b on page 7-1 for more information on Preventive Maintenance Packages.

- a. Get a sheet of paper and label it "Reject List."
As the first item in this list, write down the update (fix) ID of the update you want to reject.
- b. To list the prerequisites of an update, type the following:
(where *FixID* is the ID of the update you want to reject)

```
lslpp -pB FixID
```

and press Enter.

For example, if you want to list the prerequisites for the U401962 update, you would type `lslpp -pB U401986`.

The system will display information similar to the following:

Name	Fix Id	State	Prerequisites
Path: /usr/lib/objrepos			
bos.obj	U401986	APPLIED	*ifreq bosadt.lib.obj p=U402035 *prereq bos.obj v=03 r=02 m=0000

5. Look at the list of prerequisites listed in the `Prerequisites` column.

Are there any "p=" numbers in the `Prerequisites` column?

NO: Go to step 6.

YES: Write down the numbers in your reject list. Using the example in step 4, you would write down U402035.

Note: Some of the prerequisites in your list may also be needed to fix other problems not related to the update you are rejecting. You may not want to reject such a prerequisite. If you want to find out more about a particular prerequisite, type: (where *PrereqID* is the update, or fix, ID number of the prerequisite)

```
lslpp -AB PrereqID
```

and press Enter.

If you decide you do *not* want to reject one of the prerequisites, cross it off your reject list.

Continue with step 6.

6. Type the following:

```
smit instupdt_reject (or type smit -C instupdt_reject if you are  
working in AIXwindows)
```

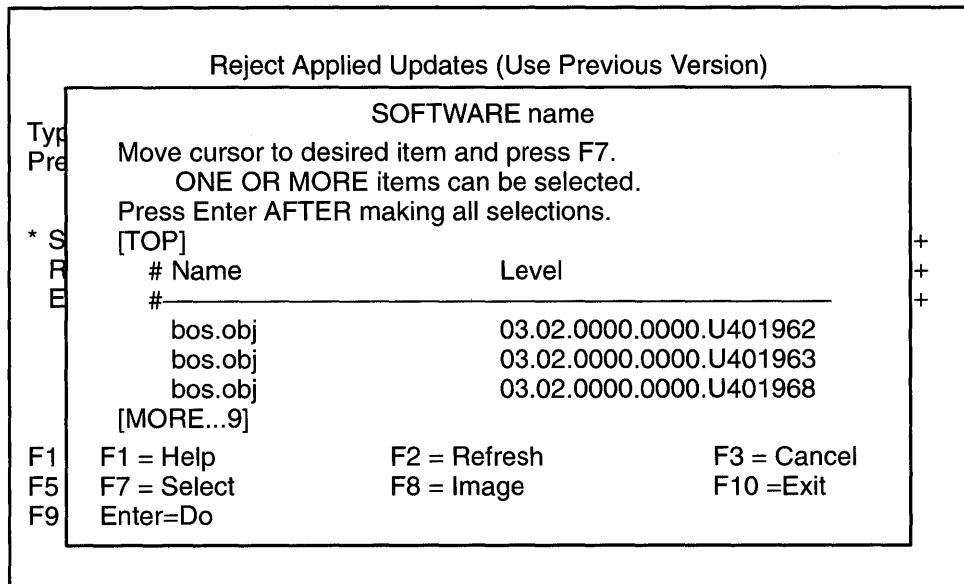
and press Enter.

A screen similar to the following is displayed:

Reject Applied Updates (Use Previous Version)			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
* SOFTWARE name	[]	[Entry Fields]	+
REJECT versions that depend on above version?	no		+
EXTEND file systems if space needed?	yes		+
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

7. SOFTWARE name is highlighted. Press F4 to list the applied updates.

A screen similar to the following is displayed:



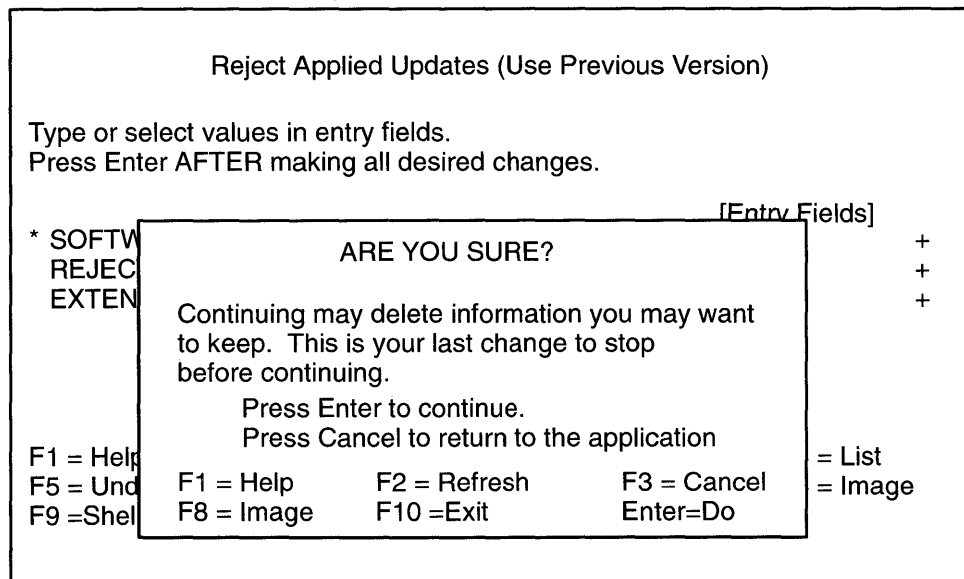
8. Refer to your reject list. You will be selecting the numbers that remain in your reject list.

Move the cursor to highlight the update (identified by the ID numbers) you want to reject. When the update you want to reject is highlighted, press F7 to select it. The > (greater than) symbol appears next to each item you select to indicate that it will be rejected. To deselect a previously selected item, move the cursor to highlight the item and press F7.

When you are sure that your selections are correct, press Enter. The Reject Applied Updates screen reappears.

9. After you have selected all the updates you want to reject, press Enter.

A screen similar to the following is displayed:



10. Press Enter again. A Command Status screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: OK                      stdout: yes                      stderr: no

Before command completion, additional instructions may appear below

[TOP]
installp: Performing requisite checking.
          (This may take several minutes.)

installp: The following software products will be rejected:
          bos.obj at level 3.2.0.0.U401968

installp: Rejecting software for product:
          bos 3.2.0.0.U401968
[MORE...107]

F1= Help      F2= Refresh    F3= Cancel    F6=Command
F8=Image     F9=Shell      F10=Exit
```

11. When the `Command:` status indicator changes to `OK`, press Enter to exit SMIT.

12. You are finished with the reject procedure.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command.

The Installing and Updating Optional Software in Version 3.2 (this is a subsection within Installation Concepts) section in the introduction of this Installation Guide.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *General Concepts and Procedures* provides information on file system types and management.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000*.

Using SMIT in *Getting Started: Managing the IBM RISC System/6000*.

IBM RISC System/6000 Problem Solving Guide.

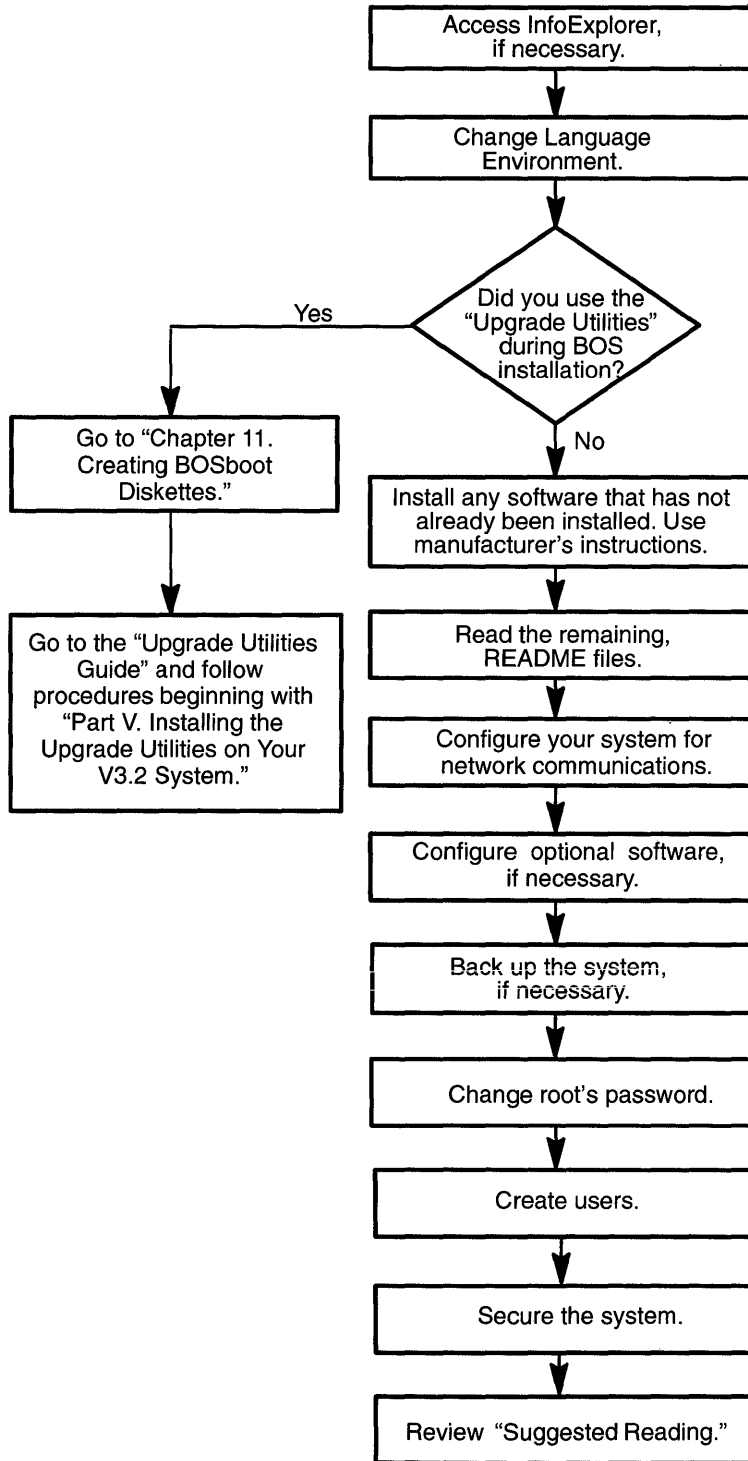
NOTES

Chapter 8. Post-Installation Procedures

This section describes how to backup your system as well as directing you to the appropriate chapters for restoring your system after using the upgrade utilities during BOS installation, accessing README files and InfoExplorer, configuring your system for network communications, and configuring optional software products you may have installed.

Flowchart for Post-Installation Procedures

This chart shows the basic steps that will be covered in this chapter.



A. Accessing InfoExplorer

InfoExplorer is your on-line hypertext information library. It contains thousands of pages of documentation that you can read and search from your system display. There are two ways that InfoExplorer can be made available. It can be installed on one of your hard disks, or you can read it from your CD-ROM disk drive. If you want to access InfoExplorer from your CD-ROM drive and it is not already mounted, go to "Chapter 13. Mounting the InfoExplorer CD-ROM." Then return here and continue with the next section.

B. Change Language Environment

Version 3.2 has been significantly enhanced in the area of National Language Support (NLS). The single, world-wide system provides support for both single-byte and multi-byte code sets. In addition to the language environments supported in Version 3.1.x, Greek and Turkish language environments (locales) are supported. Support is provided for the PC-based code sets of Version 3.1.x (IBM-850 and IBM-932), as well as the industry-standard code sets (ISO8859 and EUC (Extended Unix Code)). The PC-based code sets of Version 3.1.x are the defaults for Version 3.2. If you wish to change your language environment or change the code set associated with your environment, consult the following articles:

- "How to Change Your Locale"
- "Understanding Code Set Strategy"
- "National Language Support Overview for System Management"
- "National Language Support Overview for Programming"

C. Upgrade Utilities Procedure

If you did *not* use the "Upgrade Utilities" during Base Operating System (BOS) installation, skip to section "D. Install Non-IBM Software."

If you used the "Upgrade Utilities" to help save your system's configuration, and you now want to use the utilities to help reconfigure your system, do the following:

1. Go to "Chapter 11. Creating BOSboot Diskettes" and then return here.
2. It is recommended that you backup your system at this point. If you wish to perform a backup of your system, go to "Chapter 15. Backing Up Your System." When you are finished creating a backup, return here and continue with step 3.
3. Return to the "Version 3.1.x to Version 3.2 Upgrade Utilities Guide" and follow the procedures there, beginning with "Part V. Installing the Upgrade Utilities on your Version 3.2 System."

D. Install Non-IBM Software

If you have any non-IBM software that you have not yet installed, use the manufacturer's instructions and install it now. Then return here and continue with the next section.

E. README Files

When a piece of software is installed on your system a README file may also be automatically installed. Each software product may have its own README file. A README file is an on-line document that contains late-breaking information about changes or problems in the software. It is important that you read the README files for the optional software you installed before you begin to use your system. For instructions on how to view the README files, go to “Chapter 12. Viewing README Files.” Then return here and continue with the next section.

F. Configure Your System for Network Communications

If your system is part of a network, then the network communications software (TCP/IP and NFS), must be configured before you can communicate over the network. If you want to use your system on a network and you have not yet configured this software, go to “Chapter 14. Network Configuration.” Then return here and continue with the next section.

G. Configure Optional Software

Some optional software products must be configured (set up) prior to use. Instructions for configuring the individual optional software products are contained in the installation guide manual for each product. If your software is not yet configured, refer to the install guide for each product that you installed and complete the configuration procedures. Then return here and continue with the next section.

H. Back Up Your System

It is always a good idea to back up your system after you have installed new or updated software products. This allows you to restore your system from the backup copy, in case of a problem, or install the backup copy to another system. If you wish to perform a backup of your system, go to “Chapter 15. Backing Up Your System.” Then return here and continue with the next section.

I. Change root’s Password

When choosing a password, choose one you can easily remember, but is difficult for someone else to guess.

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
passwd
```

and press Enter.
3. Type the password you want to use for root and press Enter.
4. The system prompts you to enter the password again. Type the password exactly as you typed it in step 3 and press Enter.

Continue with the next section, “J. Create Users.”

J. Create Users

If root is the only user on your system, you should now create a nonroot user name for your everyday use. Using the root login for everyday tasks increases the possibility that you will accidentally corrupt your system due the root user's ability to run system commands. You should create a nonroot account for use when you are performing nonadministrative tasks such as running applications. In addition, you should also create user accounts for any other people who want to use the system.

1. To add new user accounts, use the **smit mkuser** command.
 - a. Type the following:

```
smit mkuser
```

and press Enter.

The Create User screen should appear.
 - b. The `User NAME` field is highlighted. Type the name of the user you want to add and press Enter.

The Command Status screen should appear.
 - c. If you want to add another user, press F3 and repeat step b. If you are finished adding new users, press F10 to exit SMIT and continue with step 2.
2. From the system prompt, type the following to set the new user's password:

```
passwd username
```

(where *username* is the name of the user created in step 1)
and press Enter.
3. The system will then prompt you to type in a password for the user. Type the password for the user and press Enter.
4. The system prompts you to enter the password again. Type the password exactly as you typed it in step 3 and press Enter.
5. Repeat steps 2 and 4 to set the password for each new user.
6. The user name is now ready for use to login to the system. The first time the username is used the system will prompt the user to select a new password. This is done so that the root administrator will not know the user's password.

Continue with the next section, "K. Secure the System."

K. Secure the System

At this point, you may want to turn your system unit key switch to the SECURE position and remove the key. There are two reasons why you may want to do this:

- When the system unit key switch is in the SECURE position, the reset button is not active and someone cannot accidentally press the reset button and cause a loss of data.
- When the key switch is in the SECURE position, you can prevent someone from rebooting your system and attempting to gain unauthorized access to your system. If you start the system while the key switch is in the SECURE position, the booting process stops and 200 appears in the three-digit LED display. The system does not perform any further operations until the key switch is set to the NORMAL or SERVICE position.

If you want to prevent accidental resets and make your system more secure, turn your key to the SECURE position and remove it.

Continue with the next section, "L. Suggested Reading."

L. Suggested Reading

Your system should now be ready to use.

Where do you go from here?

If you are a newcomer, the next document to read is *Getting Started: Using RISC System/6000*. If you will be doing system management (administration) tasks for your system, the next book to read is *Getting Started: Managing RISC System/6000*.

A good follow up to the Getting Started books is InfoExplorer. You can explore the many books it contains by using its hypertext functions. Or you can use the Education button in InfoExplorer to start InfoTrainer – a series of interactive tutorials that cover the basics. Finally, you can also look for information in the hardcopy books that came with your system.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals for more information on the concepts and procedures covered in this chapter:

The Backup Overview in *General Concepts and Procedures* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *General Concepts and Procedures* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *General Concepts and Procedures* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *General Concepts and Procedures* provides information on mounting files and directories, mount points, and automatic mounts.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000*.

Using SMIT in *Getting Started: Managing the IBM RISC System/6000*.

IBM RISC System/6000 Problem Solving Guide.

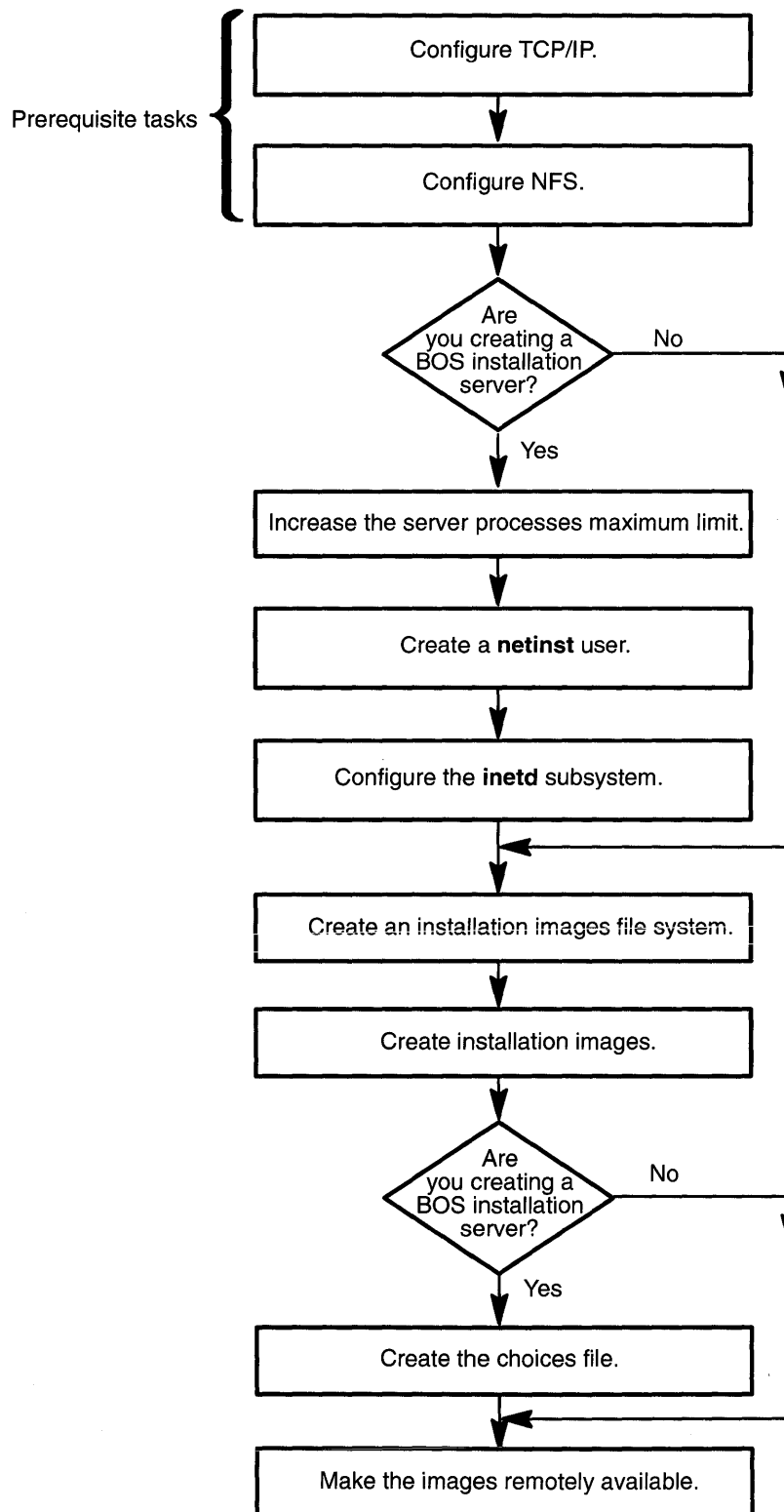
NOTES

Chapter 9. Creating an Installation Server

This chapter describes how to create a network installation server. A network installation server acts as a source of software for client machines that want to install software from across the network.

Flowchart for Creating a Network Installation Server

This flowchart shows the basic steps you must perform to create a network installation server from an installed system.



Prerequisite Tasks or Conditions

1. An Ethernet or Token-Ring network adapter must be installed.
2. You should be familiar with your basic hardware operations. If you are not, refer to the “Chapter 18. Hardware Basics” or to your hardware documentation. Then, return here and continue with step 3.
3. You should be familiar with the System Management Interface Tool (SMIT). If you are not, refer to “Chapter 19. SMIT Basics.” Then, return here and continue with step 4.
4. TCP/IP and NFS software must already be installed on your installation server.
 - a. If you are not already logged in as root on your installation server, log in as root now.
 - b. To see if TCP/IP and NFS are installed, type the following:

```
lslpp -l bosnet.*    (where the term “-l ” is a lower case “L” )
```

and press Enter.

If the message `There is no product in ...` is displayed, you will have to install the Base Operating System Network Facilities (BOSNET) optional software product. To do this, go to “Chapter 6. Optional Software Installation” and follow the procedures for installing optional software products. Then, return here and continue with step 5.

5. TCP/IP and NFS software must be configured on your installation server.
 - a. To see if TCP/IP is configured, type the following:

```
lssrc -s sendmail
```

and press Enter.

If the status of `sendmail` shows inoperative, you must configure TCP/IP. Go to “Chapter 14. Network Configuration” and follow the procedures for configuring TCP/IP. Then return here continue with the next step b.

- b. To see if NFS is configured, type the following:

```
lssrc -s lockd
```

and press Enter.

If the status of `lockd` shows inoperative, you must configure NFS. Go to “Chapter 14. Network Configuration” and follow the procedures for configuring NFS. Then return here continue with the next section, “Procedural Overview.”

Procedural Overview

The following section contains instructions for creating a system as a network installation server. This chapter contains instructions for the following procedures:

- A . Determine your procedural start point
- B . Increase the server maximum processes limit
- C . Create a new user named netinst
- D . Configure the inetd subsystem
- E . Create a file system for the installation images
- F . Create installation images
- G . Create the choices file
- H . Make the installation images available for remote use
- I . Suggested reading.

There are two different sets of instructions contained in this chapter. For most users, it is recommended that you continue with the set of instructions that begin on the next page. This set of instructions contains detailed, step-by-step directions. If you have a thorough knowledge of the Base Operating System and only need a minimal set of instructions, you can skip to page 9-38 and use the Advanced Path set of instructions. Again, most users should continue with the instructions that begin on the next page.

A . Determine Your Procedural Start Point

You have two choices:

If you are creating a server to install *just* optional software products (clients will not be installing BOS from this server), go to the section “E. Create An Installation Images File System” on page 9-15.

If you are creating a server to install *both* BOS and optional software products, go to the next section, “B. Increase the Server’s Maximum Processes Limit.”

B. Increase the Server’s Maximum Processes Limit

By default, up to nine client machines can install from an installation server at the same time.

The default maximum total number of processes allowed for installation clients is 40. Each client installation creates approximately four processes. This means that you can only install approximately nine client machines at the same time.

- If you expect that you will never have more than nine client machines simultaneously using the server, then continue with the next section, “C. Create the netinst User” on page 9-7.
- If you expect 10 or more client machines will need to use the installation server simultaneously, you must increase the server’s maximum processes limit.

PROCEDURE

Before you begin, calculate the number of processes you need. To do this, multiply four times the number of simultaneous clients you expect. For example, if you expect that 25 clients will need to use the server simultaneously, the formula would be:

4 (processes) x 25 (clients) = a maximum of 100 processes.

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit chgsys (or type smit -C chgsys if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Change / Show Characteristics of Operating System			
Type or select a value for the entry fields. Press Enter AFTER making all desired changes.			
		[Entry Fields]	
Maximum number of PROCESSES allowed per user	[40]		+#
Maximum number of pages in block I/O BUFFER CACHE	[20]		+#
Maximum Kbytes of real memory allowed for MBUFS	[2080]		+#
Automatically REBOOT system after a crash	false		+
Continuously maintain DISK I/O history	true		+
HIGH water mark for pending write I/Os per file	[0]		+#
LOW water mark for pending write I/Os per file	[0]		+#
Enable memory SCRUBBING	false		+#
Amount of usable physical memory in Kbytes	40960K		+
Primary dump device	/dev/hd7		
Secondary dump device	/dev/sydumpnul		
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

3. Maximum number of PROCESSES allowed per user is highlighted.
Type the number of processes you calculated you need and press Enter.
For example, type 100 to allow 25 concurrent client installations and press Enter.
A screen similar to the following is displayed:

COMMAND STATUS			
Command: OK	stdout: yes	stderr: no	
Before completion, additional instructions may appear below			
sys0 changed			
F1= Help	F2= Refresh	F3= Cancel	F6=Command
F8=Image	F9=Shell	F10=Exit	

The new maximum process limit is effective immediately. It remains effective with all subsequent boots of the system, until you change it again using this procedure.

4. When the Command: status indicator changes to OK, press F10 to exit SMIT.
You have finished increasing the server processes maximum limit. Continue with the next section, "C Create a netinst User."

C. Create the netinst User

This procedure describes how to create the **netinst** user. When clients contact the server to begin installation, this is the user account that will be automatically activated to begin the install process.

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit mkuser (or type smit -C mkuser if you are working in AIXwindows)
and press Enter.
```

A screen similar to the following is displayed:

Create User			
Type or select a value for the entry fields. Press Enter AFTER making all desired changes.			
[TOP]		[Entry Fields]	
* User NAME		[]	/
ADMINISTRATIVE User		false	+
User ID Anonymous UID		[]	
LOGIN User		true	
PRIMARY Group		[]	
Group set		[]	
SU Groups		[ALL]	+
HOME Directory		[]	+
[MORE...12]			
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

Note: Do not press Enter until you reach step 7.

3. User NAME is highlighted.
Type the following:

```
netinst
```

4. Move the cursor to LOGIN User?
Press the Tab key to change the default to false.
5. Move the cursor to Another user CAN SU to user?
Press the Tab key to change the default to false.
6. Move the cursor to User CAN RLOGIN?
Press the Tab key to change the default to false.
7. To create the new user, press Enter.

8. The Command Status screen appears.

An account is created on the installation server for the user **netinst** with a private Home directory and membership in the **staff** group.

9. When the Command: status indicator changes to OK, press F10 to exit SMIT.

10. Type the following:

```
cd /usr/lpp/bosinst
```

and press Enter.

11. Next, create the **db**, **bin**, and **scripts** directories in netinst's directory **/home/netinst**.

Type the following:

```
find bin db scripts -print | cpio -dumpv /home/netinst
```

and press Enter.

A list of files and number of blocks is displayed as the directories and files are created.

12. Type the following:

```
cd /home/netinst
```

and press Enter.

13. Next change the permissions for all files and directories in **/home/netinst** so that they are only accessible to user **netinst**.

Type the following:

```
chmod -R 500 *
```

and press Enter.

14. Next make the user **netinst** the owner of all the files under the **/home/netinst** directory and set the group for the files to **staff**.

Type the following:

```
chown -R netinst.staff *
```

and press Enter.

You have finished creating the user **netinst**. Continue with the next section, "D. Configure the inetd Subsystem."

D. Configure the inetd Subsystem

This procedure describes how to configure the **inetd** subsystem. The **inetd** subsystem provides Internet service management for a network. The **inetd** subsystem controls several **inetd** subservers. The **instsrv** subserver will be added to the list of **inetd** subservers. The **instsrv** subserver is needed to install the Base Operating System and other software over a network.

1. Be sure that you are logged in as root.
2. First, you need to check and see if the **instsrv** service is already active.

Type the following line:

```
smit lsservices (or type smit -C lsservices if you are working in
                AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

COMMAND STATUS			
Command: OK	stdout: yes	stderr: no	
Before completion, additional instructions may appear below			
[TOP]			
servname	Port/protname	Aliases	
echo	7/tcp		
echo	7/udp		
discard	9/tcp	sink null	
discard	9/udp	sink null	
systat	11/tcp		
[MORE...62]			
F1= Help	F2= Refresh	F3= Cancel	F6=Command
F8=Image	F9=Shell	F10=Exit	

3. Scroll through the list and check for a line similar to the following:

```
instsrv      1234/tcp # network      install services
```

If the line is in the list, skip to step 5 on page 9-11.

If it is *not* in the list, continue with step 4.

4. To add the `instsrv` service, perform the following:

a. Press F10 to exit SMIT.

b. Type the following:

```
smit mkservices      (or type smit -C mkservices if you are working in
                    AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Add a Service

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

* Official Internet SERVICE Name	[]	
* Transport PROTOCOL	tcp	+
* Socket PORT number	[]	#
Unofficial Internet SERVICE NAMES (separate names with blanks)	[]	

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

Note: Do *not* press Enter until you get to step 4d.

c. Official Internet SERVICE Name is highlighted.

Type the following:

```
instsrv
```

d. Move the cursor to Socket PORT number.

Type the following:

```
1234
```

and press Enter.

A Command Status screen appears. When the Command: status indicator changes to OK, continue with step 5.

5. Press F10 to exit SMIT.
6. Next check and see if the **instsrv** subserver is already active.
Type the following:

```
smit lsinetdconf      (or type smit -C lsinetdconf if you are working in
                     AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

COMMAND STATUS						
Command: OK		stdout: yes		stderr: no		
Before command completion, additional instructions may appear below						
[TOP]						
servname	Socket	protname	Wait/	User	Server	Program
Name	Type	Nowait			Arguments	
echo	stream	tcp	nowait	root	internal	
echo	dgram	udp	wait	root	internal	
discard	stream	tcp	nowait	root	internal	
discard	dgram	udp	wait	root	internal	
daytime	stream	tcp	nowait	root	internal	
[MORE...15]						
F1= Help	F2= Refresh	F3= Cancel	F6=Command			
F8=Image	F9=Shell	F10=Exit				

7. Scroll through the list and check for a line similar to the following:

```
instsrv  stream tcp  nowait netinst /u/netinst/bin/instsrv
```

If the line is in the list, skip to step 9 on page 9-13.

If it is not in the list, continue with step 8.

8. To add the **instsrv** subserver, perform the following:

- a. Press F10 to exit SMIT.
- b. Type the following:

smit mkinetdconf (or type smit -C mkinetdconf if you are working in AIXwindows)

and press Enter.

A screen similar to the following is displayed:

Add an inetd Subserver

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

[Entry Fields]

* Available Subservers [] +

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

- c. Available Subservers is highlighted.
To see a selection list of available subservers, press F4.

A screen similar to the following is displayed:

Add an inetd Subserver

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

[Entry Fields]

* Available Subservers [] +

Available Subservers

Move cursor to desired item and press Enter.

bootps	udp
comsat	udp
finger	tcp
instsrv	tcp
talk	udp
tftp	udp

F1	F1 = Help	F2 = Refresh	F3 = Cancel
F5	F8=Image	F10=Exit	Enter=Do
F9			

- d. Move the cursor to `instsrv tcp`. Press Enter.
A screen similar to the following is displayed:

```

                                Add an inetd Subserver

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

                                [Entry Fields]
* Internet SERVICE Name          [ instsrv]      +
* Transport PROTOCOL             tcp          +
* SOCKET Type                    stream       +
* WAIT for Server to Release Socket nowait      +
* USER Name                      [netinst]
* Service Program PATH Name      [/u/netinst/bin/instsrv]
* Service Program Command Line ARGUMENTS [instsrv -r /tmp/neti>

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

```

- e. Press Enter. A screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: OK          stdout: yes          stderr: no

Before command completion, additional instructions may appear below

0513-095 The request for subsystem refresh was completed successfully.

F1= Help      F2= Refresh    F3= Cancel    F6=Command
F8=Image     F9=Shell     F10=Exit

```

9. Press F10 to exit SMIT.

10. To show the hostname of your installation server, type the following:

`hostname`

and press Enter.

11. To verify that the `inetd` subsystem configuration is correct, type the following:
(where *Hostname* is the name of the host displayed in step 10.)

```
/usr/lpp/bosinst/ninst Hostname curdate
```

and press Enter.

If the system displays error messages, use the system messages to determine the problem and return to step 2 of “D. Configuring the `inetd` Subsystem” on page 9-9 and repeat the procedure.

If a 13-digit number is displayed, you have correctly configured the **`inetd`** subsystem. Continue with the next section, “E. Create An Installation Images File System.”

E. Create an Installation Images File System

This procedure describes how to create a file system to store the software that will be available for installation from the server. Software that is stored in an installation format is called an installation image. It is these installation images that will be stored in the file system.

Be sure to allow enough room for all of the software products that you want to install. However, be careful not to waste space on your hard disk. Once a file system is created, it cannot be reduced. It can only be extended or deleted.

The basic software needed to support a system on a network is the Base Operating System (BOS), the Network Support Facilities, and the system messages. Approximately 131,072 512-byte blocks or 64 megabytes of disk space is required for these software products.

1. Are you creating a server to install a backup image?

YES: I'm creating a server to install a backup image. Go to step 1 in "Creating the File System."

Note: The backup image must be of BOS Version 3.2. Also, it must be created using the SMIT "Backup the System" menu or the **mkszfile** and **mksysb** commands from the command line.

NO: I'm not creating a server to install a backup image. Go to question 2.

2. Are you creating a server to install both BOS and Optional Software Product images?

YES: I'm creating a server to install both BOS and Optional Software Product images. The number of 512-byte blocks of file system will be 131,072. Write down 131,072 and label it "Size of File System." Skip to step 2 in "Creating the File System" on page 9-16.

NO: I'm creating a server to install only Optional Software Product images. The number of 512-byte blocks of file system will be 8,192. Write down 8,192 and label it "Size of File System." Skip to step 2 in "Creating the File System" on page 9-16.

Creating the File System

1. To determine the amount of space required for a file system containing an installation image of an installed system, perform the following:

a. First you need to get a list of the file systems that are going to be backed up to create the installation image.

Type the following (note that the sixth character in the command is a lowercase "l"):

```
lsvg -l rootvg | grep jfs | grep open
```

and press Enter.

The system displays a screen similar to the following:

hd8	jfslog	1	1	1	open/syncd	N/A
hd4	jfs	1	1	1	open/syncd	/
hd2	jfs	20	20	1	open/syncd	/usr
hd9var	jfs	1	1	1	open/syncd	/var
hd3	jfs	2	2	1	open/syncd	/tmp
hd1	jfs	1	1	1	open/syncd	/home

b. Write down the names in the far right column, except for the phrase N/A.

- c. Next you need to find the size of each of these file systems.
Type the following:

```
df -I
```

and press Enter.

The system displays a screen similar to the following:

Filesystem	Total KB	used	free	%used	Mounted on
/dev/hd4	4096	2132	1964	52%	/
/dev/hd2	118784	109372	9412	92%	/usr
/dev/hd9var	4096	532	3562	12%	/var
/dev/hd3	8192	300	7892	3%	/tmp
/dev/hd1	4096	268	3828	6%	/home
/dev/lv00	102400	93797	8604	91%	/usr/src

- d. Search the far right column of this screen for the names that you wrote down in step b. The used column shows the amount of space required to store each file system. Add up the used numbers for all the file systems in the list from step b. For example, using the example values above, the calculations would look like this:

$$2132 + 109372 + 532 + 300 + 268 = 112604$$

- e. Multiply your own total from step d by 2. Write this number down and label it "Size of file system." Using the example total from the step above, the calculation would look like this:

$$112604 \times 2 = 225208$$

Write down the total you calculate using your own screen's values and label it "Size of file system."

- f. Continue with step 2.

2. Type the following:

```
smit crjfs (or type smit -C crjfs if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Volume Group Name

Move cursor to desired item and press Enter.

rootvg

F1 = Help

F8=Image

F2 = Refresh

F10=Exit

F3 = Cancel

Enter=Do

3. Select the volume group where you want to store the new installation images file system.
A screen similar to the following is displayed:

Add a Journaled File System

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

	[Entry Fields]	
Volume group name	rootvg	
* SIZE of file system (in 512-byte blocks)	[]	#
* MOUNT POINT	[]	
Mount AUTOMATICALLY at system restart?	no	+
PERMISSIONS	read-write	+
Mount Options	[]	+

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

Note: Do *not* press Enter until you get to step 7 on page 9-18.

4. SIZE of file system is highlighted.
Type the size of the file system you wrote down.
5. Move the cursor to MOUNT POINT.
Type the following:
`/inst.images`
6. Move the cursor to Mount AUTOMATICALLY at system restart?
Press the Tab key to change the default to `yes`.

7. To create the installation images file system, press Enter.

A screen similar to the following is displayed:

```
COMMAND STATUS

Command: OK          stdout: yes          stderr: no

Before command completion, additional instructions may appear below

New File System size is 229376

F1= Help    F2= Refresh    F3= Cancel    F6=Command
F8=Image    F9=Shell       F10=Exit
```

If the file system creation is successful, continue with step 8.

If the file system creation is *not* successful, do the following:

- a. Use the system messages to determine the problem.
 - b. Press F10 to exit SMIT.
 - c. Return to step 2 of “Creating An Installation Images File System” on page 9-16 and repeat the procedure with any necessary corrections.
8. Press F10 to exit SMIT.
 9. To mount the installation images file system, type the following:

```
mount /inst.images
```

and press Enter.

10. This step describes how to create a directory structure for the installation images. It is necessary at this point to create a directory structure to organize the installation images that will be loaded into the filesystem.

a. To create the directory structure, type the following:

(where `hardware_architecture` is the name of the architecture of the client machine that you will be installing the software over the network, and `software_version` is the version number of the software.)

```
mkdir -p /inst.images/hardware_architecture/software_version
```

and press Enter.

For example, if you are creating Version 3.2 software installable images for a RISC System/6000, you would type:

```
mkdir -p /inst.images/risc_sys6000/3.2
```

and press Enter.

b. On a piece of paper, write the full name of the directory that you are using from step 10a.

You have finished creating a file system to hold the installation images. Continue with the next section, "F. Create Installation Images."

F. Create Installation Images

An installation image is a set of files in tar or backup format. The installation image for the Version 3.2 Base Operating System (bos.obj) is in tar format. The installation images for all other software products are in backup format.

The installation images are made available to the client for network installation by placing them in the directory structure you created in the previous section, "E. Create an Installation Images File System."

1. Are you creating a backup image?
YES: I'm creating a backup image. Go to "Creating a System Installation Image Using SMIT mksysb" on page 9-20.
NO: I'm not creating a backup image. Go to question 2.
2. Are you creating both BOS and optional software product images?
YES: I'm creating both BOS and optional software product images. Go to question 3.
NO: I'm only creating optional software product images. Go to question 4.
3. Are you using tapes to create the BOS and optional software product images?
YES: I'm using tapes. Go to "Creating BOS Installation Image from a Factory Tape" on page 9-22.
NO: I'm using either a CD-ROM or diskettes.
CD-ROM: Go to "Creating BOS Installation Image from CD-ROM" on page 9-24.
Diskettes: Go to "Creating BOS Installation Image From Diskette" on page 9-25.
4. Are you using tapes or a CD-ROM to create the optional software product images?
YES: I'm using tapes or a CD-ROM. Go to "Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM" on page 9-26.
NO: I'm using diskettes. Go to "Creating Optional Software and Service Update Images from Diskettes" on page 9-30.

Creating a System Installation Image Using SMIT mksysb

You can use the SMIT Backup the System function to create a single installation image of an entire system. This image is made available for installation by storing it in the installation image directory on your installation server. In the following procedure, as an example, the installation server is backed up directly into the installation images directory.



CAUTION: If you install a SMIT **mksysb** backup image, then certain configuration information from the original source machine will be copied onto the target system. This would include data such as passwords and network addresses. Please note, this is a major change from BOS Version 3.1.

1. Be sure you have logged in as `root` on your server machine.

2. Type the following:

`smit mksysb` (or type `smit -C mksysb` if you are working in AIXwindows) and press Enter.

A screen similar to the following is displayed:

Backup the System			
Type or select a value for the entry fields. Press Enter AFTER making all desired changes.			
			[Entry Fields]
WARNING: Execution of the backup command will result in the loss of all material previously stored on the selected output medium. This command backs up only rootvg volume group			
FORCE increase of workspace if needed			no +
*Backup DEVICE or FILE (example: /dev/rfd0)			[]
[MORE...3]			
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

3. FORCE increase of work space if needed is highlighted. Press the Tab key to change the default value to yes.

4. Move the cursor to Backup DEVICE or FILE. This field specifies the destination for the backup image that will be created. Type the name of the directory that will hold the installation image followed by a slash (/) and the name you want to use for the installation image that is about to be created.

Note: The installation image must be named bos.obj or have the bos.obj* prefix. Since the installation image will be a mksysb (backup) image, it is suggested that you name the installation image bos.obj.mksysb or bos.obj.mksysb.date where date is the date that the image was created. For example, an image created on December 7 could be named bos.obj.mksysb.1207.

For example, if you used the suggested directory, you would now type:

`/inst.images/risc_sys6000/3.2/bos.obj.mksysb.1207`

5. To begin the backup, press Enter.
This will take several minutes.

As the system backs up to the installation image file system, the Command Status screen displays system messages.

If the backup is successful, then continue with step 6.

If the backup is *not* successful, do the following.

- a. Use the system messages to determine the problem.
- b. Press F10 to exit SMIT.
- c. Perform this procedure again, with corrections, beginning with step 2 on page 9-21.

6. Press F10 to exit SMIT.

You have finished creating and storing the backup installation image. Skip to “Protecting the Optional Software and Service Update Images” on page 9-33.

Creating BOS Installation Image from a Factory Tape

This procedure describes how to create a BOS installation image from a factory tape.

1. Be sure you have logged in as root on your server machine.
2. To list the number identifying the tape device, type the following:

```
lsdev -Cc tape
```

and press Enter.

The first item on the line is the device name. The name for a tape device is “rmt” and the number after the “rmt” is the number of the tape device. For example, in the name “rmt0,” zero (0) is the number of the tape device.

3. Insert the factory tape labelled “Version 3.2” into your tape drive.
4. First, change to the installation images directory.
Type the following:

```
cd /inst.images/hardware_architecture/software_version
```

(where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images)

For example, if you were using the example name, you would now type:

```
cd /inst.images/risc_sys6000/3.2
```

and press Enter.

5. If you are *not* using an 8mm tape drive, skip to step 8 on page 9-23.

If you are using an 8mm tape drive, continue with step 6.

6. To check the block size, type the following:

```
lsattr -E -l rmtx
```

(where `x` is the numeral identifying the tape device and `l` is a lowercase “L”)

and press Enter.

If the `block_size` is 512, skip to step 8 on page 9-23.

If the `block_size` is *not* 512, write down the block size and continue with step 7.

7. To change the block size to 512, type the following:

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

(where *x* is the numeral identifying the tape device and *l* is a lower case "L")

and press Enter.

8. Use the **dd** command to transfer (extract) the images from the tape into the installation images directory.

Note: The BOS installation image must be named `bos.obj` or have the `bos.obj*` prefix. For example, if the date was December 7 and you wanted to name the image based on the date it was created, you would name it `bos.obj.dec07`.

Type the following:

(where *x* is the numeral identifying the tape device and *bos.obj.name* is what you want to name the BOS installation image)

```
dd if=/dev/rmtx of=bos.obj.name ibs=90b obs=1b conv=sync fskip=3
```

and press Enter. (This process takes a while. Please be patient.)

For example, if you were using the example name and tape drive 1, you would type:

```
dd if=/dev/rmt1 of=bos.obj.dec07 ibs=90b obs=1b conv=sync fskip=3
```

and press Enter.

9. If you are using a 8mm tape drive *and* you changed the block size to 512 in step 7 on page 9-23, change it to its original value by typing:

```
chdev -a block_size=original_size -l rmtx
```

(where *x* is the numeral identifying the tape device, *original_size* is the original block size, and *l* is a lowercase "L")

and press Enter.

10. Remove the tape.

Go to "Creating Optional Software and Service Update Images from a Factory Tape" on page 9-26.

Creating BOS Installation Image from CD-ROM

This procedure describes how to create a BOS installation image from CD-ROM.

1. Be sure you have logged in as root on your server machine.
2. If you are accessing InfoExplorer from your CD-ROM (as described in “Chapter 13. Mounting the InfoExplorer CD-ROM”) and you want to create a BOS installation image from the same CD-ROM drive, you must first perform the following procedure before you invoke SMIT:

- a. Type the following:

```
umount /usr/lpp/info/Language    (where Language is the name of the  
                                language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
- c. Place the CD-ROM that contains the optional software into a disc caddy and insert the disc caddy into the CD-ROM drive.

SMIT will create and mount a temporary mount point for the CD-ROM drive.

3. Place the CD-ROM containing the BOS installation image into a disc caddy, and insert the caddy into CD-ROM drive.
4. To list the number of your tape device, type the following:

```
lsdev -Cc cdrom
```

and press Enter.

The first item on the line is the device name. The name for a CD-ROM device is “cd” and the number after the “cd” is the number of the CD-ROM device. For example, in the name “cd0,” zero (0) is the number of the CD-ROM device.

5. To mount the CD-ROM device, type the following:

```
mount -o ro -v cdrfs /dev/cdx /mnt    (where x is the number of the  
                                       CD-ROM device.)
```

and press Enter.

6. To copy the BOS installation image from the CD-ROM to your hard disk, type:

```
cp /mnt/bos.obj /inst.images/hardware_architecture/software_version
```

(where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images.)

For example, if you are creating Version 3.2 software installable images for the RISC System/6000, you would type the following:

```
cp /mnt/bos.obj /inst.images/risc_sys6000/3.2
```

and press Enter.

7. To unmount the CD-ROM device, type the following:

```
umount /mnt
```

and press Enter.

8. Remove the disc caddy from the CD-ROM drive.

Go to “Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM” on page 9-26.

Creating BOS Installation Image from Diskettes

This procedure describes how to create a BOS installation image from factory diskettes.

1. Be sure you have logged in as root on your server machine.
2. Type the following:

```
cd /inst.images/hardware_architecture/software_version
```

(where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images)

For example, if you were using the example names, you would type:

```
cd /inst.images/risc_sys6000/3.2
```

and press Enter.

3. Insert the first BOS diskette.
4. Type the following:

```
dd if=/dev/rfdx bs=90b | cat >> bos_name
```

(where `x` is the numeral associated with the name of the diskette drive (`rfdx`) and `bos_name` is the name of the BOS installation image)

Note: The BOS installation image must be named `bos.obj` or have the `bos.obj*` prefix. For example, if today's date was December 7 and you wanted to name the image based on the date it is created, you would name it `bos.obj.dec07`.

For example, if you were using diskette drive 0 and the example name, you would type:

```
dd if=/dev/rfd0 bs=90b | cat >> bos.obj.dec07
```

and press Enter.

When the `dd` command finishes running, remove the diskette and insert the next BOS diskette.

Repeat step 4 for each of your BOS diskettes.

Note: If you are using the Korn Shell (`ksh`), you can type `r` and press Enter instead of reentering the entire command. The `r` means to redo the last command.

5. Remove the last diskette.

Go to "Creating Optional Software and Service Update Images from Diskettes" on page 9-30.

Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM

This procedure describes how to create individual installation and update images for the optional software products from a factory tape or CD-ROM.

1. Be sure you have logged in as root on your server machine.
2. Are you creating software images from tape?

YES: I'm creating software images from tape. Go to step 3.

NO: I'm creating software images from CD-ROM. Read the following information and, if necessary, perform the following procedure:

If you are accessing InfoExplorer from your CD-ROM (as described in "Chapter 13. Mounting the InfoExplorer CD-ROM") and you want to create optional software images from the same CD-ROM drive, you must first perform the following procedure before you invoke SMIT:

- a. Type the following:

```
umount /usr/lpp/info/Language (where Language is the name of  
the language you are using.)
```

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
- c. Place the CD-ROM that contains the optional software into a disc caddy, and insert the caddy into the CD-ROM drive.

SMIT will create and mount a temporary mount point for the CD-ROM drive.

3. Insert the factory tape or a disc caddy containing the CD-ROM into your drive.
4. Type the following:

```
smit instupdt_for_net (or type smit -C instupdt_for_net if you are  
working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Copy Software to Hard Disk for Future Installation

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

[Entry Fields]

* INPUT device / directory for software [] +

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

5. To list the input devices, press F4.

A screen similar to the following is displayed:

Copy Software to Hard Disk for Future Installation

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

[Entry Fields]

* INPUT device / directory for software [] +

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/cd0 (/mnt/cd)

/dev/cd1 (CD-ROM Drive)

/dev/rmt0.1 (150 MB 1/4-Inch Tape Drive)

/dev/fd0 (Diskette Drive)

F1	F1 = Help	F2 = Refresh	F3=Cancel
F5	F8=Image	F10=Exit	Enter=Do
F9			

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

If you select the `/dev/cd0` device, SMIT uses the `/mnt/cd` directory as the input device. If you select the `/dev/cd1` device, SMIT does special processing to create and temporarily mount a CD-ROM file system for the drive, and then it uses the temporary mount point as the input device.



Note: When creating installation image files from the CD-ROM device using **bfcreate** on the command line, the CD-ROM device must be mounted on a CDROM file system before the command can be issued. The input device / directory (`-d` flag) for the **bfcreate** command must be the directory on which the CD-ROM is mounted.

- Move the cursor to select the tape or CD-ROM drive that contains the software and press Enter.

The following example screens use tape drive 0 (/dev/rmt0.1).

A screen similar to the following is displayed:

Copy Software to Hard Disk for Future Installation

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

		[Entry Fields]	
*	INPUT device / directory for software	/dev/rmt0.1	+
*	SOFTWARE name	[all]	
	DIRECTORY for storing software	[/usr/sys/inst.images]	
	DIRECTORY for temporary storage during copying	[/tmp]	
	EXTEND file systems if space needed?	yes	+

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

- SOFTWARE name is highlighted. To see a list of the software on the tape or CD-ROM, press F4.

A screen similar to the following is displayed:

Copy Software to Hard Disk for Future Installation

Ty Pr	<p>SOFTWARE name</p> <p>Move cursor to desired item and press F7. ONE OR MORE items can be selected. Press Enter AFTER making all selections.</p>	+
*	<p>[TOP]</p> <p style="padding-left: 20px;">INed</p> <p style="padding-left: 20px;">X11mEn_US</p> <p style="padding-left: 20px;">X11rte</p> <p style="padding-left: 20px;">bos</p> <p style="padding-left: 20px;">bosadt</p> <p>[MORE...21]</p>	+
F1 F5 F9	<p>F1 = Help</p> <p>F7=Select</p> <p>Enter=Do</p>	<p>F2 = Refresh</p> <p>F8=Image</p>
	<p>F3=Cancel</p> <p>F10=Exit</p>	

8. Read the following information before you continue with step 9.

If you are creating a server to install *both* BOS and optional software products, you must select at least the software products **bos**, **bosnet**, **bsl**, and **bsmLanguage** (where *Language* is the name of your language). Then select any additional products you want to make available on the installation server.

If you are creating a server to install *just* optional software products, select the products you want to make available on the installation server.

9. To select the desired software products, move the cursor to the desired software and press F7.

Explanations of the abbreviations for software product names can be found in "Chapter 17. Product Information."

10. After you have finished selecting *all* of the desired software products, press Enter.

11. Move the cursor to `DIRECTORY` for storing software. Type the name of the directory that you wrote down in step 10b on page 9-19.

12. Press Enter.

Note: If a message similar to `Mount volume 2 on /dev/rmt0. Press the Enter key to continue` appears, remove the current tape from the drive, insert the specified tape, and press Enter.

After several minutes, a screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: OK                      stdout: yes                      stderr: no

Before command completion, additional instructions may appear below

/inst.images/risc_sys6000/3.2/bos.shr.3.2.0.0
/inst.images/risc_sys6000/3.2/bosnet.usr.3.2.0.0
/inst.images/risc_sys6000/3.2/bsl.usr.3.2.0.0
/inst.images/risc_sys6000/3.2/bsmEn_US.usr.3.2.0.0

F1= Help      F2= Refresh   F3= Cancel   F6=Command
F8=Image     F9=Shell     F10=Exit
```

If the command runs successfully, continue with step 13. If the `Command: status` indicator changes to `failed`, do the following

- a. Use the system messages to determine the problem.
- b. Press F10 to exit SMIT and then return to step 4 on page 9-26 and repeat the procedure with any necessary corrections.

13. Press F10 to exit SMIT.

14. Remove the tape or disc caddy containing the CD-ROM from the drive.

Go to "Protecting the Optional Software and Service Update Images" on page 9-33.

Creating Optional Software and Service Update Images from Diskettes

This procedure describes how to create individual installation and update images for the optional software products on factory diskettes.

1. Be sure you have logged in as root on your server machine.
2. Type the following:

```
smit instupdt_for_net (or type smit -C instupdt_for_net if you are
                      working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Copy Software to Hard Disk for Future Installation

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

[Entry Fields]

* INPUT device / directory for software [] +

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

3. To list the input devices, press F4.

A screen similar to the following is displayed:

Copy Software to Hard Disk for Future Installation

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

[Entry Fields]

* INPUT device / directory for software [] +

INPUT device / directory for software

Move cursor to desired item and press Enter.

/dev/rmt0.1 (150 MB 1/4-Inch Tape Drive)
/dev/fd0 (Diskette Drive)

F1	F1 = Help	F2 = Refresh	F3=Cancel
F5	F8=Image	F10=Exit	Enter=Do
F9			

4. Move the cursor to select the appropriate diskette device and press Enter.

A screen similar to the following is displayed:

Copy Software to Hard Disk for Future Installation

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

	[Entry Fields]	
* INPUT device / directory for software	/dev/fd0	+
* SOFTWARE name	[all]	
DIRECTORY for storing software	[/usr/sys/inst.images]	
DIRECTORY for temporary storage during copying	[/tmp]	
EXTEND file systems if space needed?	yes	+

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

5. Insert the first diskette of a software product into the diskette drive.
6. Move the cursor to highlight the SOFTWARE name field. To retrieve a list of the software on the diskette, press F4.

A screen similar to the following is displayed:

Copy Software to Hard Disk for Future Installation

SOFTWARE name

Move cursor to desired item and press F7.
ONE OR MORE items can be selected.
Press Enter AFTER making all selections.

INed

F1 F5 F9	F1 = Help F7=Select Enter=Do	F2 = Refresh F8=Image	F3=Cancel F10=Exit
----------------	------------------------------------	--------------------------	-----------------------

7. To select software, move the cursor to the desired software and press F7. After selecting *all* of the desired software products, press Enter.

Explanations of the abbreviations for software product names can be found in "Chapter 17. Product Information."

8. Move the cursor to DIRECTORY for storing software.
Type the name of the directory that you wrote down in step 10b on page 9-19.

9. Press Enter.

Note: If a message similar to `Mount volume 2 on /dev/fd0`. Press the Enter key to continue appears, remove the current diskette from the drive, insert the specified diskette, and press Enter.

After several minutes, a screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: OK                      stdout: yes                      stderr: no

Before command completion, additional instructions may appear below.

The number of restored files is 1.
/inst.images/risc_sys6000/3.2/INed.usr.3.2.0.0

F1=Help      F2=Refresh      F3=Cancel      F6=Command
F8=Image     F9=Shell        F10=Exit

```

If the command runs successfully, continue with step 10.

If the `Command:` status indicator changes to `failed`, do the following:

- a. Use the system messages to determine the problem.
- b. Remove the diskette from the diskette drive, press F10 to exit SMIT and then return to step 2 on page 9-30 and repeat the procedure with any necessary corrections.

10. Remove the diskette from the diskette drive.

11. Read the following information before you continue with step 12.

If you are creating a server to install *both* BOS and optional software products, you must copy at least the software products **bos**, **bosnet**, **bsl**, and **bsmLanguage** (where *Language* is the name of your language). Then copy any additional products you want to make available on the installation server

If you are creating a server to install *just* optional software products, copy the products you want to make available on the installation server.

12. Do you need to copy another software product onto the installation server?

YES: I need to copy another software product. Press F3 and return to step 5 on page 9-31.

NO: I'm finished copying software. Press F10 to exit SMIT.

13. Continue with the next procedure, "Protecting the Optional Software and Service Update Images."

Protecting the Optional Software and Service Update Images

This procedure describes how to set the permissions for your installation images file system.

1. Type the following:

```
cd /inst.images
```

and press Enter.

2. To set the root user read, write, and search permissions and the read and search permissions for the other users of the installation images file system, type the following:

```
find . -type d -print | xargs chmod 755
```

and press Enter.

3. To give all users read permission for the installation images, type the following:

```
find . -type f -print | xargs chmod 444
```

and press Enter.

You have finished copying your installation and update images to your hard disk.

If you are creating a server to install *both* BOS and optional software products, continue with the next section “G Create the choices File.”

If you are creating a server to install *just* optional software products, go to “H Make the Images Remotely Available” on page 9-35.

If you are creating a server to install a backup image, continue with the next section, “G. Create the choices File.”

G. Create the choices File

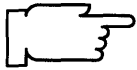
When a client system contacts the installation server, the person operating the client will see the Network Install File Selection menu. This menu shows the software that is available for installation from the server. The **/home/netinst/db/choices** file on the installation server determines what software is displayed on the Network Install File Selection menu. You must create this file and add the name of the installation images directory that you created in the previous sections. Only the installation images in the directory listed in the **choices** file will show up on the Network Install File Selection menu.

1. Type the following:

```
cd /home/netinst/db
```

and press Enter.

2. Make an entry in the **choices** file for the directory containing installation images. Use the full path name and the expansion character * (the asterisk).



Note: Make sure you type the full path name correctly or the software you just copied to your hard drive will not be displayed on the Network Install File Selection menu.

Type the following on one line:

```
echo '/inst.images/hardware_architecture/software_version/*' >> choices
```

(where **/inst.images/hardware_architecture/software_version/** is the name of the directory that holds the installation images.)

and press Enter.

For example, if you were using the example names, you would type:

```
echo '/inst.images/risc_sys6000/3.2/*' >> choices
```

You have finished creating the **/home/netinst/db/choices** file. Continue with the next section, "H. Make the Images Remotely Available."

H. Make the Images Available for Remote Use

This procedure describes how to make the installation images that were created on the installation server available to other systems on the network.

1. Type the following:

```
smit mknfsexp (or type smit -C mknfsexp if you are working in AIXwindows)
and press Enter.
```

A screen similar to the following is displayed:

Add a Directory to Exports List			
Type or select a value for the entry fields. Press Enter AFTER making all desired changes.			
		[Entry Fields]	
* PATHNAME of directory to export	[]	/	
* MODE to export directory	read-write	+	
* HOSTNAME list. If exported read-mostly	[]		
Anonymous UID	[-2]		
HOSTS allowed root access	[]		
HOSTS & NETGROUPS allowed client access	[]		
Use SECURE option?	no	+	
* EXPORT directory now, system restart or both	both	+	
PATHNAME of Exports file if using HA-NFS	[]		
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

Note: Do *not* press Enter until you get to step 4.

2. PATHNAME of directory to export is highlighted. Type the following:

```
/inst.images
```

3. To protect the installation images from being accidentally deleted by other systems on the network, move the cursor to MODE to export directory.

Press the Tab key to change the default to read-only.

4. Press Enter.

A screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: OK                      stdout: yes                      stderr: no

Before command completion, additional instructions may appear below

/inst.images
Exported /inst.images

F1= Help      F2= Refresh    F3= Cancel    F6=Command
F8=Image      F9=Shell      F10=Exit
```

5. Press F10 to exit SMIT.

You have finished creating a network installation server.

For instructions on how a client system can use the installation server to install software, refer to “Chapter 4. BOS Installation from Network” and “Chapter 6. Optional Software Installation.”

Suggested Reading

You can use InfoExplorer, your on-line hypertext information library, to learn more about your network. You can step through the InfoExplorer menus or use the search function to locate information like command names and article titles. You can also look for information in your hardcopy books if you ordered them.

Related Information

The **cd** command, **chmod** command, **chown** command, **dd** command, **df** command, **find** command, **inetd** daemon, **mkdir** command, **mount** command, and **xargs** command.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP Internet.

The Backup Overview in *General Concepts and Procedures* explains different methods of backing up, restoring, different types of backup media, and guidelines for backup policies.

The Logical Volume Storage Overview in *General Concepts and Procedures* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The File Systems Overview in *General Concepts and Procedures* provides information on file system types and management.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

ADVANCED PATH: Creating an Installation Server

A. Determine Your Procedural Start Point

If you are not already logged in as root, log in as root now.

You have two choices:

If you are creating a server to install *just* optional software products (clients will not be installing BOS from this server), go to the section “E. Create An Installation Images File System” on page 9-39.

If you are creating a server to install *both* BOS and optional software products, go to the next section “B. Increase the Server’s Maximum Processes Limit.”

B. Increase the Server’s Maximum Processes Limit

If you expect that you will never have more than nine client machines simultaneously using the server, then continue with the section “C. Create a netinst User.”

1. Calculate the number of processes needed with the following formula: number of processes needed = number of clients x 4.
2. Execute `smit chgsys` and change the Maximum number of PROCESSES allowed per user entry field to the number of processes you calculated you need.

C. Create the netinst User

1. Execute `smit mkuser` and change the following:
 - User NAME `netinst`
 - LOGIN User? `false`
 - Another user CAN SU to user? `false`
 - User CAN RLOGIN? `false`
2. Enter `cd /usr/lpp/bosinst` at the system prompt.
3. Enter `find bin db scripts -print | cpio -dumpv /home/netinst` at the system prompt.
4. Enter `chmod -R 500 *` at the system prompt.
5. Enter `chown -R netinst.staff *` at the system prompt.

D. Configure the inetd Subsystem

1. Enter `smit lsservices` and check for a line similar to the following:

```
instsrv      1234/tcp # network      install services
```

If the line is in the list, skip to step 3, else continue with step 2.
2. Execute `smit mkservices` and change the following:
 - Official Internet SERVICE Name `instsrv`
 - Socket PORT number `1234`
3. Enter `smit lsinetd.conf` and check for a line similar to the following:

```
instsrv  stream tcp  nowait  netinst /u/netinst/bin/instsrv
```

If the line is in the list, skip to step 5, else continue with step 4.

4. Execute `smit mkinetdconf` and add the **instsrv** subserver.
5. Enter `/usr/lpp/bosinst/ninst 'hostname' curdate` at the system prompt.

If the system displays error messages, use the system messages to determine the problem and return to step 1. Otherwise continue with the next section “E. Create An Installation Images File System.”

E. Create an Installation Images File System

1. Determine the amount of space required for a file system that will contain the installation images.
2. Enter `smit crjfs` and change the following:
 - SIZE of file system (From step 1.)
 - MOUNT POINT `/inst.images`
 - Mount AUTOMATICALLY at system restart? `yes`
3. If the file system creation is successful, continue with step 4, or else do the following:
 - Use the system messages to determine the problem.
 - Press F10 to exit SMIT.
 - Return to step 2 and repeat the procedure with any necessary corrections.
4. Enter `mount /inst.images` at the system prompt.
5. Enter the following:
(where *hardware_architecture* is the name of the architecture of the client machine and *software_version* is the version of the software)

```
mkdir -p /inst.images/hardware_architecture/software_version
```

F. Create Installation Images

1. Are you creating a backup image?
 - YES: Go to “Creating a System Installation Image Using SMIT mksysb.”
 - NO: Go to step 2.
2. Are you creating both BOS and optional software product images?
 - YES: Go to step 3.
 - NO: Go to step 5.
3. Are you using tapes to create the BOS and optional software product images?
 - YES: Go to “Creating BOS Installation Image from a Factory Tape.”
 - NO: I’m using either a CD-ROM or diskettes.
 - CD-ROM: Go to “Creating BOS Installation Image from CD-ROM.”
 - Diskettes: Go to “Creating BOS Installation Image From Diskette.”
4. Are you using tapes or a CD-ROM to create the optional software product images?
 - YES: I’m using tapes or a CD-ROM. Go to “Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM.”
 - NO: Go to “Creating BOS Installation Image From Diskette.”

5. Are you using tapes or a CD-ROM to create the optional software product images?
 YES: Go to “Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM.”
 NO: Go to “Creating Optional Software and Service Update Images from Diskettes.”

Creating a System Installation Image Using SMIT mkysyb

1. Execute `smit mkysyb` and change the following:
 - FORCE increase of work space if needed `yes`
 - Backup DEVICE or FILE.
 Type the name of the directory that will hold the installation image followed by a slash (/) and the name you want to use for the installation image that is about to be created.

Note: The installation image must be named `bos.obj` or have the `bos.obj*` prefix.
2. If the backup is *not* successful,
 - Use the system messages to determine the problem.
 - Press F10 to exit SMIT.
 - Perform this procedure again, with corrections, beginning with step 1.

You have finished creating and storing the backup installation image. Skip to the procedure “Protecting the Optional Software and Service Update Images.”

Creating BOS Installation Image from a Factory Tape

1. Insert the factory tape labelled “Version 3.2” into your tape drive.
2. Enter `cd /inst.images/hardware_architecture/software_version` where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images.
3. Enter `lsattr -E -l rmtx` where `x` is the numeral identifying the tape device and `l` is a lower case “L.”
 If the `block_size` is 512, skip to step 5, else continue with step 4.
4. Enter `chdev -a block_size=512 -l rmtx` where `x` is the numeral identifying the tape device and `l` is a lower case “L.”
5. Enter `dd if=/dev/rmtx of=bos_name ibs=90b obs=1b conv=sync fskip=3` (where `x` is the numeral associated with the name of the tape drive (`rmtx`) and `bos_name` is `bos.obj` or has the `bos.obj*` prefix.)
6. If you changed the block size to 512 in step 4, change it to its original value by entering `chdev -a block_size=original_size -l rmtx` at the system prompt.

Go to procedure “Creating Optional Software and Service Update Images from a Factory Tape.”

Creating BOS Installation Image from Diskettes

1. Enter `cd /inst.images/hardware_architecture/software_version` (where `/inst.images/hardware_architecture/software_version` is the name of the directory that holds the installation images.)
2. Insert the first BOS diskette.
3. Enter `dd if=/dev/rfdx bs=90b | cat >> bos_name` where `x` is the numeral associated with the name of the diskette drive (`rfdx`) and `bos_name` is `bos.obj` or has the `bos.obj*` prefix.

4. Remove the diskette, insert the next diskette, and repeat step 3.

Note: If you are using the Korn Shell (ksh), you can enter `r` instead of reentering the entire command. The `r` means to redo the last command.

Go to “Creating Optional Software and Service Update Images from Diskettes.”

Creating Optional Software and Service Update Images from a Factory Tape or CD-ROM

1. Insert the factory tape labelled “Version 3.2” into your tape drive.
2. Execute `smit instupdt_for_net` and change the following:

- SOFTWARE name

If you are creating a server to install *both* BOS and optional software products, select the products `bos`, `bosnet`, `bsl`, and `bsmLanguage`. Then select any additional products you want to make available.

If you are creating a server to install *just* optional software products, select the products you want to make available.

- DIRECTORY for storing software

Go to “Protecting the Optional Software and Service Update Images.”

Creating Optional Software and Service Update Images from Diskettes

1. Insert the first diskette of a software product into the diskette drive.
2. Execute `smit instupdt_for_net` and change the following:

- SOFTWARE name

If you are creating a server to install *both* BOS and optional software products, select the products `bos`, `bosnet`, `bsl`, and `bsmLanguage`. Then select any additional products you want to make available.

If you are creating a server to install *just* optional software products, select the products you want to make available.

- DIRECTORY for storing software
- DIRECTORY for temporary storage during copying

If the `/tmp` file system is not large enough, then type the name of a directory within a file system that contains enough disk space to restore the software.

3. Repeat steps 1 and 2 for each software product that you want to make available on the installation server.

Continue with the next procedure, “Protecting the Optional Software and Service Update Images.”

Protecting the Optional Software and Service Update Images

1. Enter `cd /inst.images` at the system prompt.
2. Enter `find . -type d -print | xargs chmod 755` at the system prompt.
3. Enter `find . -type f -print | xargs chmod 444` at the system prompt.

If you are creating a server to install *just* optional software products, go to “H. Make the Images Remotely Available.” Otherwise, continue with the next section, “G. Create the choices File.”

G. Create the choices File

Enter `echo '/inst.images/hardware_architecture/software_version/*' >> /home/netinst/db/choices` on one line where `/inst.images/hardware_architecture/software_version/` is the name of the directory that holds the installation images.

H. Make the Images Remotely Available

Execute `smit mknfsexp` and change the following:

- PATHNAME of directory to export `/inst.images`
- MODE to export directory `read-only`

You have finished creating a network installation server.

Chapter 10. Diskless System Installation

This chapter contains procedures for creating a new diskless community and procedures for adding clients and software to an existing diskless community.

Diskless workstations remotely access a boot image and a file tree. Diskless workstations are referred to as *clients* of a server. *Diskless servers* are machines that provide file trees and boot images for diskless clients. The combination of a server and its clients can be referred to as a diskless community.

This chapter contains simplified versions of some of the installation procedures covered in the *Diskless Workstation Management (DWM) Guide*. This chapter contains procedures for creating and modifying the simplest type of diskless community – a single server that provides all resources for the diskless clients. Alternately, client resources can be distributed among several servers. If you need to create a more complex type of community, you should use the installation procedures in the *DWM Guide*.



Note: You should read the section called “Introduction to Diskless Workstation Management” in the *DWM Guide* before you begin the installation procedures in this chapter.

A Word About LAN-Dependent Workstations

All systems require access to a file tree in order to function properly. Additionally, all systems require a paging and dump device. They also need a boot image, which is used to boot (start up) the system. These dependencies can be fulfilled by local and/or remote file systems. *Local* means that a file system is stored on a disk which is connected to the system and *remote* specifies that the file system is stored on another machine and that it is accessed via the network. The locations of these file systems defines the type of system: *standard*, *diskless*, *dataless*, or *remote /usr*.

The following chart shows how each file system is accessed for the different types of configurations.

file systems	TYPES OF SYSTEMS			
	standard	diskless	dataless	remote/usr
/	local	remote	remote	local
/usr	local	remote	remote	remote
/var	local	remote	remote	local
/tmp	local	remote	remote	local
/home	local	remote	remote	local
other file systems	local/remote	remote	local/remote	local/remote
boot image	local	remote	remote	local
paging	local	remote	local	local
dump	local	remote	local	local
Remote boot ROM function required	no	yes	yes	no

As shown in the chart, the amount of network dependency corresponds to the machine's configuration. For diskless machines, all resources are remote, so it is totally dependent on a functioning network. Dataless machines are similar, except that they have a local paging and local dump device (*/home* can be local by modifying */etc/filesystems* file). A remote */usr* machine uses the network to access a */usr* filesystem only; everything else is local.

And a standard system accesses everything locally. Note that in the remote */usr* and standard configurations, accessing other remote file systems is possible, however, it is the user's responsibility to set this up.

Where Do I Go Next in This Chapter?

To find your start point in this chapter, answer the following questions until you reach an answer that sends you to a specific section in this chapter.

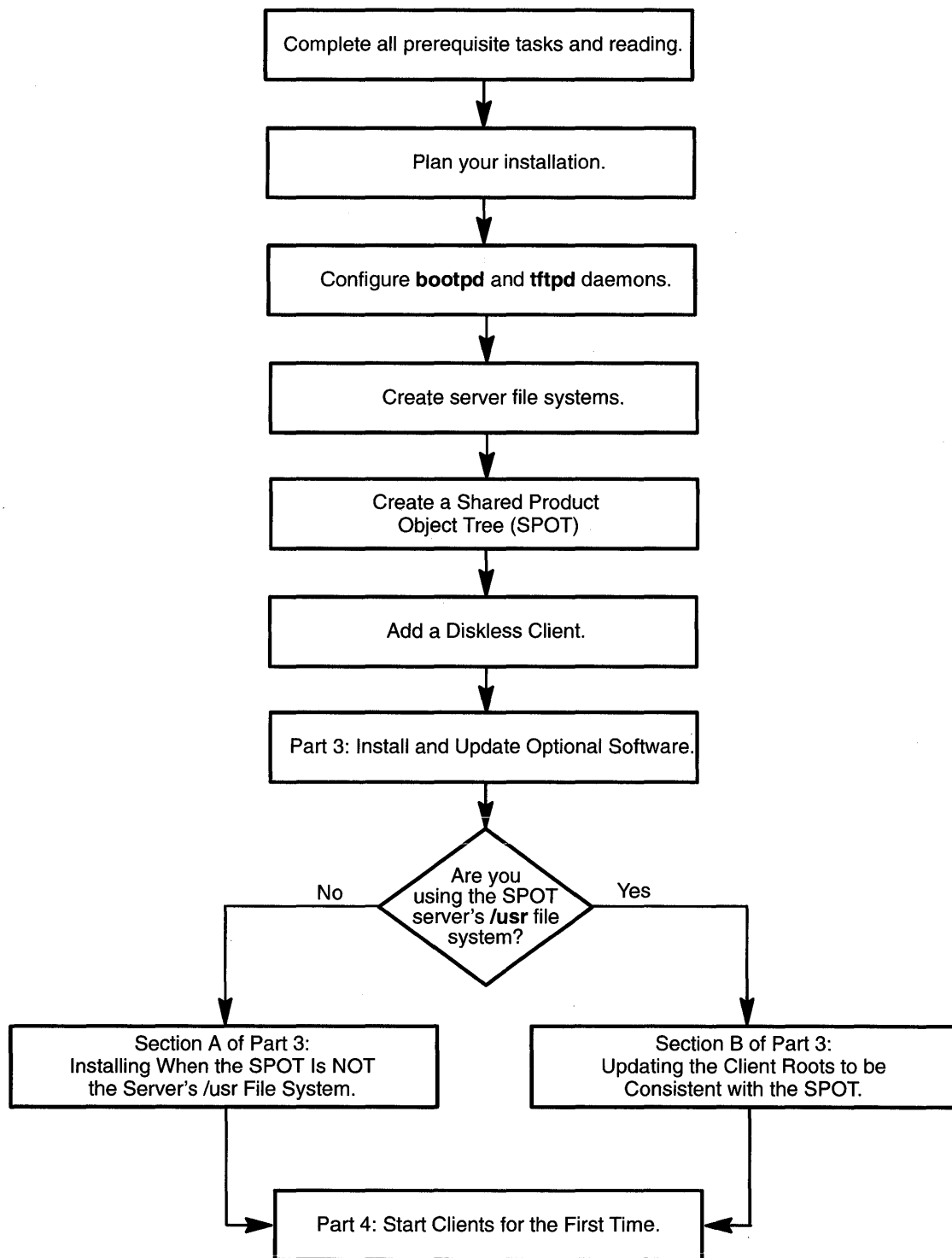
Find your answer under each question and follow the directions listed after your answer.

1. Are you creating a *new* diskless server?
 - YES: I'm creating a *new* diskless server. Go to question 2.
 - NO: I'm adding or updating a client or installing optional software or updates to an existing server. Go to question 3.
2. Is the machine that will be the diskless server running Version 3.2?
 - YES: It is running Version 3.2. Go to "Part 1. Creating a V3.2 Diskless Server" on page 10-3.
 - NO: It is running Version 3.1.x or any other operating system. Go to "Part 2. Creating a non-AIX Version 3.2 Diskless Server" on page 10-32.
3. Are you installing software or updates?
 - YES: I'm installing optional software or updates. Go to "Part 3. Install and Update Optional Software" on page 10-44.
 - NO: I'm adding a *new* client or updating an *existing* client. Go to question 4.
4. Are you adding a *new* client to an existing server?
 - YES: I'm adding a *new* client on an existing server. Go to question 5.
 - NO: I'm updating an *existing* client to use local paging. Go to "F. Convert a Diskless Client into a Dataless Client" on page 10-74.
5. Is the *existing* server running Version 3.2?
 - YES: It is running Version 3.2. Go to "E. Increase the Size of a File System" on page 10-24.
 - NO: It is running Version 3.1.x or any other operating system. Go to "B. Increase the Size of a File System" on page 10-42.

Part 1: Creating a Version 3.2 Diskless Server

Flowchart for Creating a Version 3.2 Diskless Server

This flowchart shows the basic steps you must perform to create a diskless server from an installed system.



Procedural Overview

The following section contains instructions for preparing diskless servers that are running Version 3.2. This chapter will take you through the following procedures:

- A. Plan Your Installation
- B. Configure the bootpd and tftpd Daemons
- C. Create File Systems to Serve Diskless Clients
- D. Create a Shared Product Object Tree (SPOT)
- E. Increase the Server's File Systems
- F. Add a Diskless Client

Continue with the next section when you are ready to begin the installation.

Prerequisite Tasks or Conditions

The following steps must be completed before you can begin the procedures in this section:

1. To create a diskless community you must have workstations available that can function as diskless clients. The following Powerstations can be used as diskless clients: Model 7011 Type 220, Model 7012 Types 340 or 350.
2. An Ethernet or Token-Ring network adapter must be installed on your diskless server.
3. You should be familiar with the basics of network configuration. For basic network configuration information refer to the InfoExplorer document "Communications Concepts and Procedures."
4. You should be familiar with your basic hardware operations. For basic hardware information, refer to "Chapter 18. Hardware Basics" or your hardware documentation.
5. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to "Chapter 19. SMIT Basics."
6. TCP/IP and NFS software must already be installed on your diskless server.

a. If you are not already logged in as root on your diskless server, log in as root now.

b. To see if TCP/IP and NFS are installed, type the following:
(where the term "-l" is a lower case "L")

```
lslpp -l bosnet.*
```

and press Enter.

If the message `There is no product in ...` is displayed, you will have to install the "Base Operating System Network Facilities (BOSNET)" optional software product. Go to "Chapter 6. Optional Software Installation" and following the procedures for installing optional software products; then return here and continue with step 7.

7. TCP/IP and NFS software must be configured on your diskless server.

a. To see if TCP/IP is configured, type the following:

```
lssrc -s sendmail
```

and press Enter.

If the status of `sendmail` shows inoperative, you must configure TCP/IP. Go to "Chapter 14. Network Configuration" and following the procedures for configuring TCP/IP; then return here continue with the next step b.

b. To see if NFS is configured, type the following:

```
lssrc -s lockd
```

and press Enter.

If the status of `lockd` shows inoperative, you must configure NFS. Go to "Chapter 14. Network Configuration" and following the procedures for configuring NFS; then return here continue with step 8.

8. To read the diskless README file, type the following:

```
pg /usr/lpp/bos/README.diskless
```

and press Enter.

A. Plan Your Installation

Your first task is to decide what method you want to use to create the Shared Product Object Tree (SPOT) and what you want to name your SPOT.

There are two methods to create a SPOT.

The first method is to create a SPOT by using the server's existing **/usr** file system. This procedure saves disk space, approximately 70MB, on the SPOT server because there is only one copy of the Version 3.2 file tree. All the Optional Program Products on the server that are installed before the SPOT is created will be accessible by the client. This is also the fastest and simplest method for creating a SPOT.

The second method is to create a SPOT by installing a second copy of the Version 3.2 file tree onto the server. You would do this if you wanted to install a limited or extended set of optional software for your diskless clients.

In both methods, the root portion of the Optional Program Products can be installed before you boot your system for the first time, or they can be installed during the first boot process.

1. Decide which method you want to use to create your SPOT.
2. Decide what you want to name your SPOT. For example, if you are creating a SPOT for a group of engineers, you could name your SPOT "engineering."
3. If you are creating a SPOT by using the server's existing **/usr** file system, complete the Creating File Systems Plan (Using the Server's /usr) beginning on page 16-20.

If you are creating a SPOT by installing the operating system, complete the Creating File Systems Plan (Installing the operating system) beginning on page 16-18.

After you have completed the appropriate plan, return here and continue with the next section, "B. Configure the bootpd and tftpd Daemons."

B. Configure the bootpd and tftpd Daemons

The first step is to configure the **bootpd** and **tftpd** daemons. The **bootpd** and **tftpd** daemons will be added to the list of inetd subervers.

PROCEDURE

1. If you are not already logged in as root on the machine you want to use as your diskless server, log in as root now.
2. Check to see if the **bootps** subserver is already available.
Type the following:

```
smit lsinetdconf      (or smit -C lsinetdconf if you are working inside
                     AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

COMMAND STATUS					
Command: OK		stdout: yes		stderr: no	
Before command completion, additional instructions may appear below					
[TOP]					
servname Name	Type	Socket	protname Nowait	Wait/ User	Server Program Arguments
echo	stream	tcp	nowait	root	internal
echo	dgram	udp	wait	root	internal
discard	stream	tcp	nowait	root	internal
discard	dgram	udp	wait	root	internal
daytime	stream	tcp	nowait	root	internal
[MORE...15]					
F1= Help	F2= Refresh	F3= Cancel	F6=Command		
F8=Image	F9=Shell	F10=Exit			

3. Scroll through the list and look for a line similar to the following:

```
bootps  dgram  udp      wait    root    /etc/bootpd bootpd
```

If the line is in the list, skip to step 8 on page 10-11.

If it is not in the list, press F10 to exit SMIT and continue with step 4.

4. Type the following:

```
smit diskless          (or smit -C diskless if you are working inside  
                        AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

```

                                Diskless Workstation Management

Move cursor to desired item and press Enter.

Start Daemons on Server
Manage Shared Product Object Trees (SPOTs)
Install/Maintain Software
Manage Software Inventory
Manage Clients

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

5. Start Daemons on Server is already highlighted.
Press Enter.

A screen similar to the following is displayed:

```

                                Start Daemons on Server

Move cursor to desired item and press Enter.

Start BOOTP daemon
Configure NFS (if Not Already Configured)
Start TFTP daemon

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


6. Start BOOTP Daemon is highlighted.
Press Enter.

A screen similar to the following is displayed:

Start BOOTP Daemon

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

BOOTPTAB pathname [Entry Fields]
[/etc/bootptab]

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

7. The default BOOTPTAB location is displayed. Generally, this default is acceptable and you should now just press Enter. However, if you want to specify a different location type it in now and then press Enter.

A screen similar to the following is displayed:

COMMAND STATUS

Command: OK stdout: yes stderr: no

Before command completion, additional instructions may appear below

0513-095 The request for subsystem refresh was completed successfully.

F1= Help	F2= Refresh	F3= Cancel	F6=Command
F8=Image	F9=Shell	F10=Exit	

8. Press F10 to exit SMIT.
9. Next check to see if the tftp subserver is already active.
Type the following:

```
smit lsinetdconf      (or smit -C lsinetdconf if you are working inside
                     AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

COMMAND STATUS						
Command: OK		stdout: yes		stderr: no		
Before command completion, additional instructions may appear below						
[TOP]						
servname Name	Type	Socket	proname Nowait	Wait/ User	Server	Program Arguments
echo	stream	tcp	nowait	root	internal	
echo	dgram	udp	wait	root	internal	
discard	stream	tcp	nowait	root	internal	
discard	dgram	udp	wait	root	internal	
daytime	stream	tcp	nowait	root	internal	
[MORE...15]						
F1= Help	F2= Refresh	F3= Cancel	F6=Command			
F8=Image	F9=Shell	F10=Exit				

10. Scroll through the list and look for a line similar to the following:

```
tftp    dgram  udp    wait    nobody  /etc/tftpd tftpd -n
```

If the line is in the list, skip to step 17 on page 10-14.

If it is not in the list, press F10 to exit SMIT and continue with step 11.

11. Type the following:

smit diskless (or `smit -C diskless` if you are working inside AIXwindows)

and press Enter.

A screen similar to the following is displayed:

```

                                Diskless Workstation Management

Move cursor to desired item and press Enter.

Start Daemons on Server
Manage Shared Product Object Trees (SPOTs)
Install / Maintain Software
Manage Software Inventory
Manage Clients

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

12. Start Daemons on Server is already highlighted.

Press Enter.

A screen similar to the following is displayed:

```

                                Start Daemons on Server

Move cursor to desired item and press Enter.

Start BOOTP daemon
Configure NFS (if Not Already Configured)
Start TFTP daemon

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

13. Move the cursor to Start TFTP Daemon.
Press Enter.

A screen similar to the following is displayed:

```

                                Add an inetd Subserver

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* Available Subservers                                [Entry Fields]
                                                       [ ] +

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

14. Available Subservers is highlighted.
To see a selection list of available subservers, press F4.

A screen similar to the following is displayed:

```

                                Add an inetd Subserver

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* Available Subservers                                [Entry Fields]
                                                       [ ] +

                                Available Subservers
                                Move cursor to desired item and press Enter.
                                comsat  udp
                                finger  tcp
                                instsrv tcp
                                talk    udp
                                tftp    udp

F1      F1 = Help      F2 = Refresh      F3 = Cancel
F5      F8=Image      F10=Exit          Enter=Do
F9
  
```

15. Move the cursor to `tftp udp`.
Press Enter.

A screen similar to the following is displayed:

Add an inetd Subserver

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]	
* Internet SERVICE Name	[tftp]	+
* Transport PROTOCOL	udp	+
* SOCKET Type	dgram	+
* WAIT for Server to Release Socket	nowait	
* USER Name	[nobody]	
* Service Program PATH Name	[/etc/tftpd]	
* Service Program Command Line ARGUMENTS	[tftpd -n]	

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

16. To make the **tftpd** subserver available, press Enter.

A screen similar to the following is displayed:

COMMAND STATUS

Command: OK stdout: yes stderr: no

Before command completion, additional instructions may appear below

0513-095 The request for subsystem refresh was completed successfully.

F1= Help	F2= Refresh	F3= Cancel	F6=Command
F8=Image	F9=Shell	F10=Exit	

17. Press F10 to exit SMIT.

Continue with the next section, "C. Create File Systems to Serve Diskless Clients."

C. Create File Systems to Serve Diskless Clients

This section describes how to create file systems to serve diskless clients.

These file systems are created to store the file tree. You want to use these file systems instead of using the root file system because these file systems can be deleted later if you need to recover disk space.

Additionally, it is recommended that, if possible, you create these file systems in a nonroot volume group. This will allow you to upgrade the system without affecting these file systems. Use the **smit mkvg** command if you want to create a nonroot volume group.

Creating the File Systems

Refer to your Creating File Systems worksheet. The following procedure must be repeated for each of the following file systems:

- /export/root
- /export/home
- /export/dump
- /export/swap
- /fttpboot

If you are creating a SPOT by installing the Version 3.2 operating system, you will also need to repeat this procedure for the two additional file systems:

- /export/exec
- /export/share

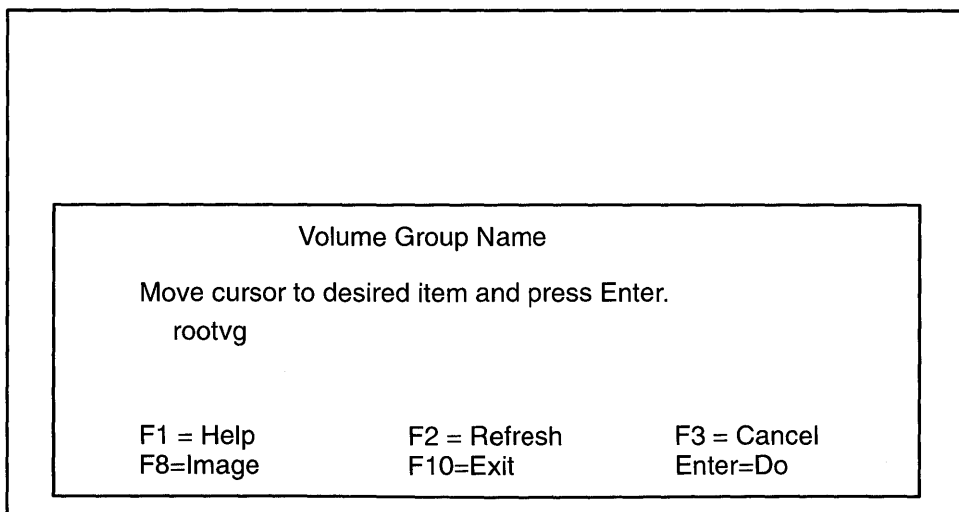
PROCEDURE

1. If you are not already logged in as root onto the machine you want to use as your diskless server, log in as root now.
2. Type the following:

```
smit crjfs      (or smit -C crjfs if you are working inside AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:



Note: It is recommended that you select a nonroot volume group if any exist on the system.

3. Select the volume group where you want to create the file system.

A screen similar to the following is displayed:

Add a Journaled File System			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
Volume group name	[Entry Fields]		
	rootvg		
* SIZE of file system (in 512-byte blocks)	[]		#
* MOUNT POINT	[]		
Mount AUTOMATICALLY at system restart?	no		+
PERMISSIONS	read-write		+
Mount Options	[]		+
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

Note: Do *not* press Enter until you get to step 6.

4. Move the cursor to Mount AUTOMATICALLY at system restart?

Press the Tab key to change the default to yes.

5. Refer to your Creating File Systems worksheet. Type the information from the worksheet to the following fields on the Add a Journaled File System screen:

- Size of the file system
- Mount Point

6. To create the file system, press Enter.

A screen similar to the following is displayed:

```
COMMAND STATUS

Command: OK          stdout: yes          stderr: no

Before command completion, additional instructions may appear below

New File System size is 229376

F1= Help    F2= Refresh    F3= Cancel    F6=Command
F8=Image    F9=Shell       F10=Exit
```

Note: It's OK for the size on the COMMAND STATUS screen to be larger than the value you entered. File system sizes are automatically rounded up to the next higher unit size. Also, if you mistyped any values or did not change the `Mount AUTOMATICALLY at system restart?` field to `yes`, you can make corrections in the next procedure, "Mounting and Verifying the File Systems."

7. If the file system creation is successful, continue with step 8.

If the file system creation is *not* successful, use the system messages to determine the problem. Press F10 to exit SMIT. Return to step 2 on page 10-15 and repeat the procedure with any necessary corrections.

8. Check the box next to the file system you just added on your worksheet.
9. Are ALL the file systems listed below checked off on your worksheet?

- /export/root
- /export/home
- /export/dump
- /export/swap
- /tftpboot
- /export/exec (optional, only if you are installing the operating system into the SPOT)
- /export/share (optional, only if you are installing the operating system into the SPOT)

NO: Press F3 twice and return to step 3 on page 10-16.

YES: Press F10 to exit SMIT and continue with the next procedure, "Mounting and Verifying the File Systems."

Mounting and Verifying the File Systems

PROCEDURE

1. To mount the file systems, type the following:

```
mount -a -v jfs
```

and press Enter.

Note: You can ignore any messages indicating a file system is already mounted.

2. To verify the file systems are mounted and have the correct size, type the following:

```
df | grep /dev/lv
```

and press Enter.

The system displays information on your screen similar to the following:

/dev/lv00	4096	3972	3%	16	1%	/export/root
/dev/lv01	12288	11920	3%	16	0%	/export/home
/dev/lv02	8292	7940	3%	16	1%	/export/dump
/dev/lv03	36864	35760	3%	16	0%	/export/swap
/dev/lv04	4096	3964	3%	16	1%	/tftpboot

If you are creating a SPOT by installing the operating system, you should also see these file systems:

/dev/lv05	71680	70960	1%	16	0%	/export/exec
/dev/lv06	4096	3972	3%	16	1%	/export/share

3. Check the last column from the listing in step 2 and make sure that *all* of the file systems on your worksheet are in the list on the screen.
 - If you mistyped the mount point of the file system when you added it, use the **smit umount** command to unmount the file system, the **smit chjfs** command to change the name of the file system to the correct mount point, and then return to step 1.
 - If you did not create a file system with the Mount AUTOMATICALLY at system restart? field set to yes, use the **smit chjfs** command to set it to yes, and then return to step 1.
 - If the system does not display all the file systems on your worksheet, return to the procedure "Creating the File Systems" on page 10-15 and create the missing file systems. Then, repeat this procedure starting with step 1 on page 10-18.
4. Next, check the second column from the listing in step 2 and make sure that ALL of the file system sizes are correct. The file system sizes in step 2 are in terms of 1024-byte blocks and not 512-byte blocks that were used on your worksheet. Use the following steps to convert the worksheet numbers so that you can compare them to the screen:
 - a. For each file system on your worksheet, divide the size of the file system by 2 and write it down on your worksheet.
 - b. Next, compare each of the new size values on your worksheet to the size listed on the screen for each file system.
 - c. If the size on the screen is smaller than the new size on the worksheet, you must increase the size of that file system. It's OK for the size on the screen to be larger than the new size on your worksheet.
 - d. If you need to increase the size of a file system, use the **smit chjfs** command. Be sure to use your original value and not the value from step 4a.

Continue with the next section, "D. Create a Shared Product Object Tree (SPOT) Server."

D. Create a Shared Product Object Tree (SPOT)

This section describes how to create a Shared Product Object Tree (SPOT).

- If you want to create a SPOT that uses the diskless server's existing `/usr` file system, continue with the procedure "Creating a SPOT Using the Server's `/usr` File System."
- If you want to create a SPOT by installing Version 3.2, go to the procedure "Creating a SPOT by Installing Version 3.2."

Creating a SPOT Using the Server's `/usr` File System

PROCEDURE

1. If you are not already logged in as root on your diskless server, log in as root now.
2. To create the SPOT, type the following:

```
mkspot -A /usr -v SPOTNAME
```

(where *SPOTNAME* is the name you want to call your SPOT)

and press Enter.

A series of messages will appear as the SPOT is created. When the process is complete, the system prompt will reappear.

3. To start the necessary daemons, do the following:

- a. Type the following:

```
startsrc -s portmap
```

and press Enter.

- b. Type the following:

```
startsrc -g nfs
```

and press Enter.

Note: You can ignore any messages indicating a NFS subsystem is already started.

You have finished creating your SPOT. Go to the section "F. Add a Diskless Client" on page 10-27.

Creating a SPOT by Installing Version 3.2

PROCEDURE

1. If you are not already logged in as root on your diskless server, log in as root now.
2. Are you installing from CD-ROM?
 - NO: Go to step 3.
 - YES: Read the following warning.



Warning: If you are accessing InfoExplorer from your CD-ROM (as described in “Chapter 13. Mounting the InfoExplorer CD-ROM”) and you want to install BOS Version 3.2 from the same CD-ROM drive, you must first perform the following procedures before you invoke SMIT to add the SPOT:

- a. Type the following:
(where *Language* is the name of the language you are using.)

```
umount /usr/lpp/info/Language
```
- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
- c. Place the CD-ROM that you are using to install into the SPOT into a disc caddy, and insert the caddy into the CD-ROM drive.

During the installation, SMIT will create and mount a temporary mount point for the CD-ROM drive.

3. Type the following:

```
smit diskless          (or smit -C diskless if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Diskless Workstation Management

Move cursor to desired item and press Enter.

Start Daemons on Server
Manage Shared Product Object Trees (SPOTs)
Install / Maintain Software
Manage Software Inventory
Manage Clients

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

4. Move the cursor to `Manage Shared Product Object Trees (SPOTs)`. Press Enter.

A screen similar to the following is displayed:

```

                                Manage Shared Product Object Trees (SPOTs)

                                Move cursor to desired item and press Enter.

                                List All SPOTS
                                List all Clients on a SPOT
                                Show Characteristics of a SPOT
                                Add a SPOT
                                Remove a SPOT

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

5. Move the cursor to `Add a SPOT` and press Enter.

A screen similar to the following is displayed:

```

                                Add a SPOT

                                Type or select values in entry fields.
                                Press Enter AFTER making all desired changes.

                                *          [Entry Fields]
                                SPOT name          [ ]

                                INPUT device/INPUT SPOT name          [/dev/rmt0.1]          +
                                SPOT SERVER hostname          [atlas]
                                PARENT directory of the SPOT          [/export/exec]
                                BOOT SERVER hostname          [atlas]
                                BOOTIMAGE directory          [:/ftpboot]
                                BOOTPTAB                      [:/etc/bootptab]
                                SHARE SERVER hostname          [atlas]
                                SHARE (/usr/share) directory          [:/export/share/AIX/usr]          +
                                DETAILED messages during creation?          [yes]

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

Note: Do not press Enter again until you get to the end of step 7.

6. `SPOT name` is highlighted. Type the name for the SPOT you are adding.

7. Move the cursor to `INPUT device/INPUT SPOT name`.
Press F4 to show a list of input devices.

A screen similar to the following is displayed:

```

                                Add a SPOT
Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                [Entry Fields]
* SPOT name                                [ ] +
INPUT device / INPUT SPOT name
INPUT device / INPUT SPOT name
Move cursor to desired item and press Enter.
/dev/rmt0.1 (2.3 GB 8mm Tape Drive)
/dev/cd0 (/mnt/cd)
/dev/cd1 (CD-ROM Drive)
engineers
F1
F5
F9
F1 = Help      F2 = Refresh    F3=Cancel
F8=Image      F10=Exit       Enter=Do

```

In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

If you select the `/dev/cd0` device, SMIT uses the `/mnt/cd` directory as the input device. If you select the `/dev/cd1` device, SMIT does special processing to create and temporarily mount a CD-ROM file system for the drive and, then it uses the temporary mount point as the input device.



Note: When making a SPOT with the CD-ROM device using `mkspot` on the command line, the CD-ROM device must be mounted on a CDROM file system before the command can be issued. The input device (`-f` flag) for the `mkspot` command must be the full path to the `bos.obj` file in the directory on which the CD-ROM is mounted. For example, `/mnt/cd/bos.obj`.

8. On this screen you select the source for the Base Operating System you are installing into this SPOT. A source can be CD-ROM, tape, or an existing SPOT.
Move the cursor to the source from which you want to install.
Press Enter.
9. If you are installing from tape, insert the factory tape labeled "Version 3.2" into the drive. If you are installing from CD-ROM, place the CD-ROM into a disc caddy, and insert the caddy into the CD-ROM drive.

10. To create the SPOT, press Enter.

A screen similar to the following is displayed:

```
COMMAND STATUS

Command: OK          stdout: yes          stderr: no

Before command completion, additional instructions may appear below

processing files for "composers" SPOT
  creating the "bach:/export/exec/composers/usr" directory
  initializing the SPOT with files from "/dev/rmt0.1"

F1= Help      F2= Refresh      F3= Cancel      F6=Command
F8=Image      F9=Shell         F10=Exit
```

11. When `Command: running` changes to `Command: OK`, press F10 to exit SMIT.

12. To start the necessary daemons, do the following:

a. Type the following:

```
startsrc -s portmap
```

and press Enter.

b. Type the following:

```
startsrc -g nfs
```

and press Enter.

Note: You can ignore any messages indicating a NFS subsystem is already started.

13. Go to section "F. Add a Diskless Client" on page 10-27.

E. Increase the Size of a File System

The section describes how to calculate the new sizes of the diskless server's file systems. You may have to increase the size of the following file systems: **/export/home**, **/export/root**, and **/export/swap**.

Calculating Size Needed for Increasing a File System

PROCEDURE

1. To calculate the size needed for increasing the root file system, use the formula:

file system size = number of new clients you are adding x 4 x 2048.

Write down the number and label it "root."

2. To calculate the size needed for increasing the home file system, use the following formula:

file system size = number of MB per user x number of users on all new clients x 2048.

For example, if you want to allow 1.5MB of hard disk space per user and you have 10 users, you would increase the home file system by 30720.

Write down the number and label it "home."

3. To calculate the size needed for increasing the paging file system, use the following formula:

file system size = total number of MB of RAM for all new clients x 2 x 2048.

To find the amount of RAM (Memory) that was shipped with the client, refer to the *About Your Machine* document that came with your client.

Write down the number and label it "swap."

Continue with the next procedure, "Changing the Size of a File System."

Changing the Size of a File System

This procedure will be repeated for the following file systems:

- /export/root
- /export/home
- /export/swap

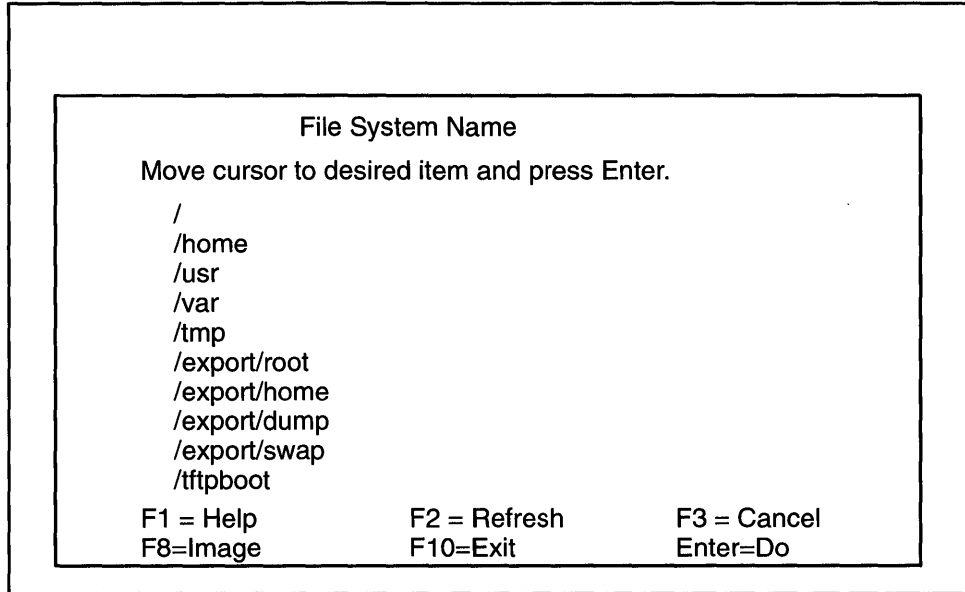
PROCEDURE

1. If you are not already logged in as root on your diskless server, log in as root now.
2. Type the following:

```
smit chjfs      (or smit -C chjfs if you are working inside AIXwindows)
```

and press Enter.

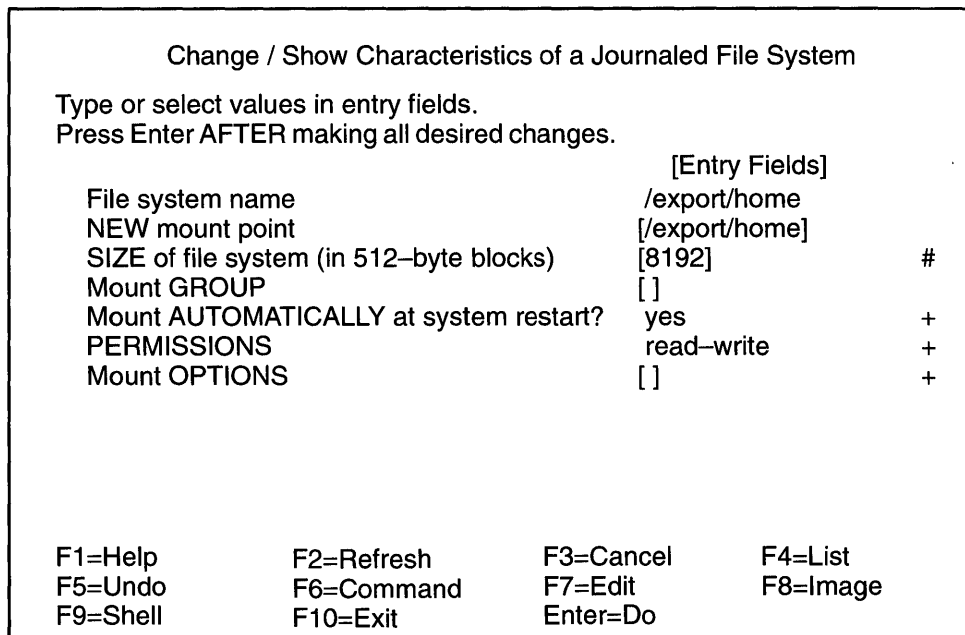
A screen similar to the following displays:



3. Move the cursor to select one of the following file systems and press Enter:

- /export/root
- /export/home
- /export/swap

A screen similar to the following displays:



4. Move the cursor to SIZE of file system (in 512-byte blocks).

5. Add to the number in the entry field the size you calculated in procedure "Calculating Size Needed for Increasing a File System" for the file system you are increasing.

6. Press Enter. A Command Status screen appears.

If the Command: status indicator changes to OK, continue with step 7.

If the Command: status indicator changes to failed, do the following:

- a. Use the system messages to determine the problem.
- b. Press F10 to exit SMIT.
- c. Return to step 2 on page 10-24 and repeat the procedure with any necessary corrections.

7. Have you successfully increased the size for *all* of file systems listed below?

- /export/root
- /export/home
- /export/swap

NO: Press F3 twice and return to step 3 on page 10-25.

YES: Press F10 to exit SMIT and continue with the next procedure, "F. Add A Diskless Client."

F. Add a Diskless Client

This section describes how to add a diskless client to your diskless community. You will need to repeat the steps in this section for each diskless client you want to add.

PROCEDURE

Before you begin this procedure, you must fill out a plan for each client you want to add (see page 16-22 of this manual).

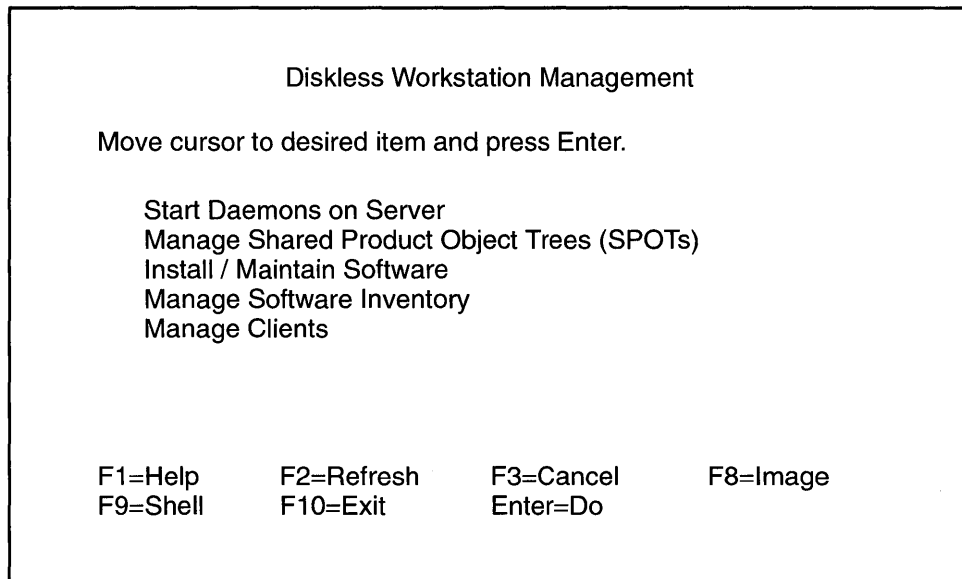
1. If you are not already logged in as root on your diskless server, log in as root now.

2. Type the following:

```
smit diskless          (or smit -C diskless if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:



3. Move the cursor to `Manage Clients`.
Press Enter.

A screen similar to the following is displayed:

Manage Clients

Move cursor to desired item and press Enter.

List All Diskless Clients
 Add a Host
 Add a Diskless Client
 Change / Show Client SPOT
 Change / Show Characteristics of a Client
 Remove a Diskless Client

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

4. You have two choices:

If you are using a nameserver, skip to step 10 on page 10-29.

If you are *not* using a nameserver, continue with step 5.

5. First, you need to make the client's name and network address known to the server. Move the cursor to `Add a Host` and press Enter.

A screen similar to the following is displayed:

Add a Host Name

Type or select values in entry fields.
 Press Enter AFTER making all desired changes.

* INTERNET ADDRESS (dotted decimal)	[Entry Fields]
* HOST NAME	[]
ALIAS(ES) (if any – separated by a blank space)	[]
COMMENT (if any – for the host entry)	[]

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

6. INTERNET ADDRESS (dotted decimal) is highlighted. (Note: Do *not* type any leading zeroes when you type the network address. For example, do not type 002.020.120.010. Instead, type 2.20.120.10 as the address.) Type the address of the diskless client.

7. Move the cursor to HOST NAME. Type the name of the diskless client.

8. Press Enter to save the name and address.

9. Press the F3 key twice to return to the Manage Clients menu.
Now you are ready to add the client to your diskless server. Continue with step 10.

10. Move the cursor to Add a Diskless Client.
Press Enter.

A screen similar to the following is displayed:

Add a Diskless Client

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

[Entry Fields]

SPOT name [] +

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

11. To list the available SPOTs, press F4.

A screen similar to the following is displayed:

Add a Diskless Client

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

[Entry Fields]

SPOT name [] +

SPOT name

Move cursor to desired item and press Enter.

composers

Engineers

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

12. Move the cursor to the SPOT you want to use and press Enter.

A screen similar to the following is displayed:

Add a Diskless Client

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]	
* CLIENT name	[]	
SPOT name	[composers]	
NETWORK HARDWARE type	[1]	+#
* HARDWARE address of client machine	[]	
GATEWAY INTERNET (IP) address	[]	
NETWORK SUBNETMASK	[]	
ROOT parent directory	[/export/root]	
HOME parent directory	[/export/home]	
DUMP parent directory	[/export/dump]	
PAGING parent directory	[/export/swap]	
PAGING size in blocks	[65536]	#
MICROCODE directory	[/usr/lib/microcode]	
[MORE . . . 6]		

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

Note: Do *not* press Enter until you get to step 15.

13. CLIENT name is highlighted. Refer to your Adding a Diskless Client worksheet.

Type the hostname of the client you want to add.

Note: If you are not using a nameserver, then it is the same name you just typed when you entered the client's network address in step 7. If you are using a nameserver, type the name the nameserver uses for this client.

14. Use the following procedure for the preceding screen.

Note: Do *not* type any leading zeroes in the gateway and subnet addresses. For example, do not type 002.020.120.010 as the gateway address. Instead, type 2.20.120.10 as the address.

Refer to your Adding a Diskless Client worksheet. Type the information from the worksheet to the following fields on the Add a Diskless Client screen:

- Network hardware type
- Hardware address of client machine
- Gateway address
- Subnetmask
- Paging size in blocks

15. After you have made all the necessary changes, press Enter.

A screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: running      stdout: no      stderr: no

Before command completion, additional instructions may appear below.

processing for client "handle"
  root directory initialization in "/export/root"
  restoring proto files from
    "grieg:/export/exec/3.2/usr/proto_root.tar"

F1=Help      F2=Refresh      F3=Cancel      F6=Command
F8=Image     F9=Shell        F10=Exit

```

It will take several minutes for the client to be added. When the process is finished, the `Command:` status indicator changes to `OK` or `failed`.

If the client was added successfully, continue with step 16.

If the client was *not* added successfully, refer to the troubleshooting section of the *Diskless Management Workstation Guide* and follow the procedures for determining the problem. When you have corrected the problem, return to the beginning of this section and repeat the procedure.

16. Do you need to add another diskless client?

YES: Press F3 twice and return to step 4 on page 10-28.

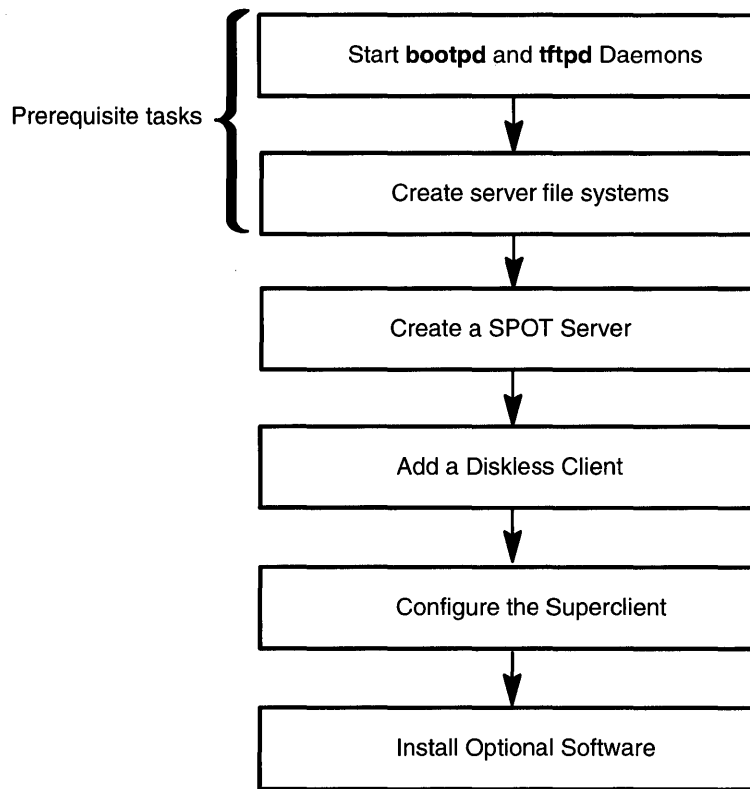
NO: Press F10 to exit SMIT and continue with step 17.

17. When you were planning your diskless community, you may have decided that your clients do *not* need to use any optional software products; they only need the Base Operating System. If so, remove the tape from the tape drive and go to the section in this chapter titled "Part 4: Starting a Diskless Client for the First Time" on page 10-60. If you do want to install optional software, go to the section in this chapter titled "Part 3: Install and Update Optional Software" on page 10-44.

Part 2: Creating a Non-AIX Version 3.2 Diskless Server

Flowchart for Creating a Non-AIX Version 3.2 Diskless Server

This flow chart shows the basic steps you must perform to create a diskless server from an installed system.



Procedural Overview

The following section contains instructions for creating a diskless server on a machine that is running Version 3.1.x or the operating system or a non-AIX operating system. This chapter contains instructions for the following procedures:

- A. Create a Shared Product Object Tree (SPOT) Server
- B. Increase the Size of a File System
- C. Add a Diskless Client
- D. Configure the Superclient
- E. Install Optional Software

Prerequisite Tasks or Conditions

The following steps must be completed before you can begin the procedures in the following sections:

1. To create a diskless community you must have workstations available that can function as diskless clients. The following POWER systems can be used as diskless clients: Model 7011 Type 220 and Model 7012 Types 340 and 350.
2. The Shared Product Object Tree (SPOT) server must have a tape or CD-ROM device installed that can read the Version 3.2 installation tape or CD-ROM.
3. TCP/IP and NFS must be running on the server. If your server is running Version 3.1.x, you can do the following steps to see if TCP/IP and NFS are running:
 - a. If you are not already logged in as root on your diskless server, log in as root now.
 - b. To see if TCP/IP and NFS are installed, enter the following:

```
lslpp -l bosnet.*
```

 (Note: The term “-l” is a lower case “L”)

If the message there is no LPP that matches is displayed, you will have to install the “Base Operating System Network Facilities (BOSNET)” optional software product. Refer to the documentation that came with your system and follow the instructions for installing optional software products.
 - c. To see if TCP/IP is configured, enter the following:

```
lssrc -s sendmail
```

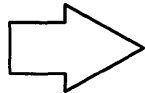
If the status of sendmail shows inoperative, you must configure TCP/IP. Refer to chapter “14. Network Configuration” and following the procedures for configuring TCP/IP.
 - d. To see if NFS is configured, enter the following:

```
lssrc -s lockd
```

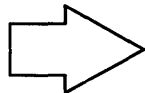
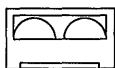
If the status of lockd shows inoperative, you must configure NFS. Refer to chapter “14. Network Configuration” and following the procedures for configuring NFS.
4. All client and server hostnames are known to the network.
5. NFS (Sun/ONC Version 4.0.3 or later) must be running on the server. The following NFS processes are required:
 - **rpc.mountd** daemon
 - **nfsd** daemon
 - **portmap** daemon
 - **rpc.lockd** daemon
 - **rpc.statd** daemon
6. The **tftpd** and **bootpd** daemons must be running on the server. For servers that are not running the Version 3.2 and that do not already have a version of these daemons, source code for these daemons is provided in the Diskless Workstation Management software. However, the files must be built before the daemons can be initialized. For more information, see the article “How to Build the bootpd and tftpd Daemons” in the *Diskless Workstation Management Guide*.
7. For non-AIX servers, make sure that the **/tmp** file system has at least 5 MB of free disk space. If your system does not have a **/tmp** file system, make sure the **/** (root) file system has at least 5 MB of free disk space.

A. Create a Shared Product Object Tree (SPOT) Server

This procedure describes how to create a Shared Product Object Tree (SPOT) server on a non-AIX Version 3.2 system.



If you are installing from CD-ROM, go to the section titled “Getting the DMW Commands from CD-ROM” on page 10-37.



If you are installing from tape, go to the next section, “Getting the DMW Commands from Tape.”

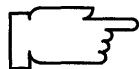
Getting the DMW Commands from Tape

1. If you are not already logged in as root on your diskless server, log in as root now.
2. Insert the Version 3.2 installation tape into the tape drive.
3. Type the following:

```
cd /
```

and press Enter.

4. Rewind the tape. On a Version 3.1.x system, type the following:



Note: Anytime in this chapter you are asked to type the name of your tape device, use a device name that does not cause the tape to automatically rewind on close. In Version 3.1, you would add the “.1” suffix to the name so that the tape will not rewind.

```
tctl -f /dev/name rewind (where name is the name of your tape device)
```

and press Enter.

For example, if your tape device name is rmt0, you would type:

```
tctl -f /dev/rmt0.1 rewind
```

and press Enter.

5. If you are *not* using a 8mm tape drive, skip to step 8.
If you are using a 8mm tape drive, continue with step 6.
6. Determine the block size of the tape device.

For example, if you are using a Version 3.1.x system and your tape device name is rmt0, you would type:

```
lsattr -E -l rmt0
```

and press Enter.

If the `block_size` is 512, skip to step 8.

If the `block_size` is *not* 512, write down the block size and continue with step 7.

7. Change the block size to 512.

For example, if you are using a Version 3.1.x system and your tape device name is `rmt0`, you would type:

```
chdev -a block_size=512 -l rmt0
```

and press Enter.

8. Position the tape to the BOS installation image (the fourth image on the tape).
On a Version 3.1.x system, type the following:

```
tctl -f /dev/name fsf 3    (where name is the name (nonrewinding) of your tape device)
```

and press Enter.

9. To extract the directory that holds the commands, type the following:

```
tar -xvf /dev/name ./usr/lib/dwm    (where name is the name of your tape device)
```

and press Enter.

10. Go to the section titled “Making the SPOT” on page 10-38.

Getting the DWM Commands from CD-ROM

1. If you are not already logged in as root on your diskless server, log in as root now.
2. If you are installing from CD-ROM, place the CD-ROM into a disc caddy, and insert the caddy into the CD-ROM drive.
3. To change to the root (`/`) directory, type the following:

```
cd /    (where there is one space between the cd and the slash.)
```

and press Enter.

4. Take the necessary steps to create a CD-ROM file system and mount it on a directory of your choice on your server.

For example, if you are running a Version 3.1.x system and the name of your CD-ROM device is `cd0`, you would type the following to mount your CD-ROM device onto the `/mnt/cd` directory:

```
mount -o ro -v cdrfs /dev/cd0 /mnt/cd
```

and press Enter.

The CD-ROM file system is then mounted.

5. To extract the directory that holds the Diskless Workstation Management commands, type the following:

```
tar -xvf MountDir/bos.obj ./usr/lib/dwm    (where MountDir is the path name of the directory where the CD-ROM device is mounted)
```

and press Enter.

6. Go to the next section, “Making the SPOT,” on page 10-38.

Making the SPOT

1. Before you can use the commands, you must set your *PATH* environment variable.
If you are using the Bourne (sh) or Korn (ksh) shell, continue with step 2.
If you are using the C-shell (csh), skip to step 3.
2. Perform the following steps to set the *PATH* variable:
 - a. Type the following:

```
PATH=$PATH:/usr/lib/dwm
```

and press Enter.
 - b. Type the following:

```
export PATH
```

and press Enter.
 - c. Continue with step 7.
3. To set the *PATH* variable, type the following:

```
set path = ($path /usr/lib/dwm)
```

and press Enter.
4. For any other servers, you may have to change the following variables in the **/usr/lib/dwm/dwm_platform** file to make the Diskless Workstation Management commands work successfully:
 - DEFAULT_device
 - DEFAULT_tape_prefix
 - tctl
 - set_tape_bs
 - grep
 - awk
 - DD_DEV
 - echo
 - tar_create
 - fs_shortdev
 - ls_size_field
 - ping
5. Complete the Creating File Systems Plan (Installing the Operating System) beginning on page 16-18.
Note: If you are using different directories than the ones specified in the Creating File Systems Worksheet (Installing the operating system), make sure you use the appropriate flags with the **mkspot** command to specify the different directories.
6. Create the file systems to serve your diskless clients. Refer to your Creating File Systems worksheet.
If you are using a Version 3.1.x server, refer to "C. Create File Systems to Serve Diskless Clients" on page 10-15 for instructions on how to create these file systems; then return here and continue with step 7.

7. Use the **mkspot** command to put the executable files (the SPOT) into the **/export/exec** directory.

Refer to the “Diskless Workstation Management Commands” for more information on the **mkspot** command.

For example, if you are using a Version 3.1.x system and you want to create a SPOT named “composers” from the tape device named **rmt0**, you would type:

```
mkspot -f /dev/rmt0.1 -v composers
```

and press Enter.

If you are running a Version 3.1.x system and you want to create a SPOT named “composers” from a CD-ROM file system mounted on the directory **/mnt/cd**, you would type the following:

```
mkspot -f /mnt/cd/bos.obj -v composers
```

and press Enter.

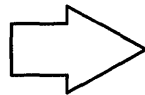
The file named **bos.obj** is a tar image file of the Base Operating System.

8. Go to the next section, “Preparing the Server for Optional Software Installation.”

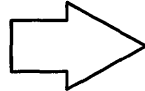
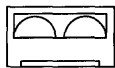
Preparing the Server for Optional Software Installation

1. If one of the machines that you are going to use as a diskless client has a local device that can read the Version 3.2 installation medium, skip this step and go to step 3.

Otherwise, do one of the following:



If you are installing from CD-ROM, go to step 2.



If you are installing from tape, continue with this step.

You must copy the optional software images from the installation medium and place them on the server using the **xlpp** command.

To copy the software to your hard drive, do the following:

- a. Insert the Version 3.2 tape into the diskless server’s tape drive.
- b. To list the Optional Software Products, type the following:
(where *name* is the (nonrewinding) name of your diskless server’s tape device)

```
xlpp -f /dev/name -l -v
```

and press Enter.

Note: You may wish to redirect the output to a file for easier viewing.

For example, if you are using a Version 3.1.x system and you want to list the table of contents on the tape device named **rmt0** and redirect the output to a file called **/tmp/output.list**, you would type:

```
xlpp -f /dev/rmt0.1 -l -v > /tmp/output.list
```

and press Enter.

- c. Write down the names of the software you want to install from the list you obtained in step b.

- d. To extract the software, type the following:

```
xlpp -f /dev/name -I SPOTNAME SoftwareList
```

(where *name* is the name of your tape device, *SPOTNAME* is the name of your SPOT, and *SoftwareList* is the names of the software you want to install separated by single spaces.)

and press Enter.

For example, if you are using a Version 3.1.x system and you want to extract the following images from the tape device named rmt0 into a SPOT called "composers:"

X11rte.obj	(AIXwindows Run Time Environment)
X11rte.ext.obj	(AIXwindows Run Time Extensions)
bosnet.obj	(Network Facilities)

You would type the following on one line:

```
xlpp -f /dev/rmt0.1 -I composers X11rte.obj X11rte.ext.obj  
bosnet.obj
```

and press Enter.

- e. Write down the name of the directory that holds the installation images. If you did not specify a directory with the **-I** flag, the default directory used is **/usr/sys/inst.images**.
2. To copy the optional software images from the installation CD-ROM into a directory on your server, do the following:

- a. If your installation CD-ROM is currently mounted, go to step b. If not, take the necessary steps to create a CD-ROM file system and mount it on a directory of your choice on your server.

For example, if you are running an AIX Version 3.1.x system and the name of your CD-ROM device is *cd0*, you would type the following to mount your CD-ROM device onto the */mnt/cd* directory:

```
mount -o ro -v cdrfs /dev/cd0 /mnt/cd
```

and press Enter.

The CD-ROM file system is then mounted.

- b. To get a list of the optional software products on the CD-ROM, type the following:

```
ls -l MountDir
```

(where *MountDir* is the directory onto which the CD-ROM is mounted.)

Note: The CD-ROM contains a file named *bos.obj* that is a tar image file of BOS. The CD-ROM also contains other files that are the optional software products or updates.

- c. From the list you obtained in step b, write down the file names of the software you want to install.

- d. To copy the software, type the following:

```
cp SoftwareList TargetDir
```

 (where *SoftwareList* is a list of the file names of the software on the CD-ROM you want to install and *TargetDir* is the directory on the server to which you want to copy the software images.)

and press Enter.



CAUTION: Do not copy the hidden table of contents file named `.toc` to the target directory on your server. When you install from your superclient, the installation commands will build a valid table of contents for this directory.

For example, to copy the following images

```
X11rte.obj  
X11rte.ext.obj  
bosnet.obj
```

from a CD-ROM mounted on the `/mnt/cd` directory so that they are visible from a superclient of a SPOT on your server called “composers,” you could execute the following commands:

Note: The second command is entered all on one line.

```
cd /mnt/cd  
  
cp X11rte.obj X11rte.ext.obj bosnet.obj  
/export/exec/composers/usr/sys/inst.images
```

In this example, the three images are copied to the directory name `/export/exec/composers/usr/sys/inst.images` on the server. This directory is seen as the `/usr/sys/inst.images` directory by a client of the SPOT named “composers.”

3. If you are using an 8mm tape drive *and* you changed the block size to 512, change the tape drive back to its original block size.

For example, if you are using a Version 3.1.x system and your tape device name is `rmt0` and the original block size was 1024, you would type:

```
chdev -a block_size=1024 -l rmt0
```

and press Enter.

If you are using a CD-ROM disc, you can unmount it at this time.

For example, if you are running a Version 3.1.x operating system and your CD-ROM is mounted on the `/mnt/cd` directory, you would type the following:

```
umount /mnt/cd
```

and press Enter.

4. Go to the next section, “Displaying the Diskless README File.”

Displaying the Diskless README File

1. You should now go and read the diskless README file.
Use the `pg /usr/lpp/bos/README.diskless` command to display this file.
2. You have finished making a non-AIX Version 3.2 diskless server. Skip to section “C. Add a Diskless Client” on page 10-42.

B. Increase the Size of a File System

The section describes how to calculate the new sizes of the diskless server's file systems. You may have to increase the size of the following file systems: **/export/home**, **/export/root**, and **/export/swap**.

PROCEDURE

1. To calculate the size needed for increasing the root file system, use the formula:

file system size = number of new clients you are adding x 4 x 2048.

2. To calculate the size needed for increasing the home file system, use the following formula:

file system size = number of MB per user x number of users on all new clients x 2048.

For example, if you want to allow 1.5MB of hard disk space per user and you have 10 additional users, you would increase the home file system by 30720.

3. To calculate the size needed for increasing the paging file system, use the following formula:

file system size = total number of MB of RAM for all new clients x 2 x 2048.

To find the amount of RAM (Memory) that was shipped with the client, refer to the *About Your Machine* document that came with your client.

4. Refer to your system documentation for instructions on how to increase the size of a file system and increase the size of the home, root and swap file systems.

After you have finished increasing the size of your file systems, continue with the next section, "C. Add a Diskless Client."

C. Add a Diskless Client

The section describes how to add a diskless client. Repeat the steps in this section for each of the clients you need to create.

PROCEDURE

1. Use the **mkdclient** command to create a diskless client.

Refer to the "Version 3.2 Diskless Workstation Management Commands" for more information on the **mkdclient** command.

Refer to your Adding a Diskless Client worksheet for the specific values to use when you create each client.

For example, to create a client named **liszt** with 32MB of memory and a Token-Ring network adapter with a hardware address of 10005a21124c using the Version 3.2 SPOT, you would type:

```
mkdclient -a -E composers -A 10005a21124c -N 6 -Z 65536 -v liszt
```

and press Enter.



Note: At least one of the clients you create must be created as a superclient. This is the client that you will use to install the optional software products onto your server. To make a client a superclient add the flag **-i** to the **mkdclient** command.

2. To confirm that a client was created correctly, type the following:

```
lsdclient -L client_host_name (where client_host_name is the name of  
the client)
```

and press Enter.

Use the **chdclient** command to make any corrections to the client.

Refer to the *Version 3.2 Diskless Workstation Management Commands* for more information on the **lsdclient** and **chdclient** commands.

Continue with the next section, "D. Configure the Superclient."

D. Configure the Superclient

A superclient workstation must be used to install the optional software.

You must now configure and start your superclient. Go to Part 4, "Starting a Diskless Client for the First Time," of this chapter on page 10-61 and follow the procedures for starting your superclient. When you are finished with starting your superclient, return here and continue with the next section, "E. Install Optional Software."

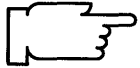
E. Install Optional Software

When you used the **mkspot** command in step 7 on page 10-39, the operating system was automatically installed into the SPOT on your server. You then used the **xlpp** command to copy onto your server the installation images of the optional software products. These images are in a compressed format. Before the optional products can be used, they must be installed (expanded).

When you were planning your diskless community, you may have decided that your clients do *not* need to use any optional software products; that they only need the Base Operating System. If so, remove the tape from the tape drive and go to the section in this chapter titled "Part 4: Starting a Diskless Client for the First Time" on page 10-60. If you do want to install optional software, go to "Part 3: Install and Update Optional Software" on page 10-44 and follow the procedures for installing optional software with your superclient. When you begin the installation procedures, use the directory name you wrote down in step e on page 10-40 to fill out your installation plan.

Part 3: Install and Update Optional Software

During the process of adding a SPOT, the Base Operating System (BOS) was automatically installed into the SPOT. This part describes how to install optional software products – such as BOS extensions, tools, and programming languages – into the SPOT on your server.



Warning: The installation of optional software or updates on the clients should be performed immediately after installing or updating software on the server. If the client installation is not done immediately, unpredictable results can occur on the client because of inconsistent software between the client's root and the server's /usr file system. If a client machine is rebooted before the client software is installed, the machine can hang.

Did you create the SPOT using the server's **/usr** file system?

NO: I created the SPOT by installing BOS Version 3.2.x. Go to "A. Installing When the SPOT is Not the Server's /usr File System" on the next page.

YES: I created the SPOT using the server's **/usr** file system.

If the SPOT is the server's **/usr** file system, then you must first install the optional software or service updates on the server through the "Standard Installation & Maintenance" menus. If you have already installed the desired software on the server, go to Section B of Part 3 in this chapter.

If you have not yet installed the software on the server, go to "Chapter 6. Optional Software Installation" for instructions on how to install optional software on the server. For instructions on how to update the software on the server, go to "Chapter 7. Service Updates Installation." After completing the installation on the server, go to Section B of Part 3 in this chapter for instructions on how to complete the installation of the clients of the SPOT.

A. Installing When the SPOT Is Not the Server's /usr File System

This section describes how to install optional software and corrective service updates on a SPOT and its clients when the SPOT is not the server's `/usr` file system.

1. If necessary, refer to "Chapter 17. Product Information" for descriptions of the software products you are installing or updating. When finished, return to this page and continue with step 2.
2. If your diskless server is running Version 3.2, log into the server as root. You will perform these procedures on your server.

If your diskless server is running Version 3.1.x or any other operating system, log into your superclient machine as root. You will perform these procedures on your superclient.

3. Are you installing from CD-ROM?

NO: Go to step 4.

YES: Read the following information and, if necessary, perform the following procedure.

If you are accessing InfoExplorer from your CD-ROM (as described in "Chapter 13. Mounting the InfoExplorer CD-ROM") and you want to install BOS Version 3.2 from the same CD-ROM drive, you must first perform the following procedures before you invoke SMIT:

- a. Type the following:
(where *Language* is the name of the language you are using.)

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

- b. Press the eject button on the CD-ROM drive for at least two seconds to eject the InfoExplorer CD-ROM.
- c. Place the BOS Version 3.2 CD-ROM into a disc caddy, and insert the caddy into the CD-ROM drive.

During the installation, SMIT will create and mount a temporary mount point for the CD-ROM drive.

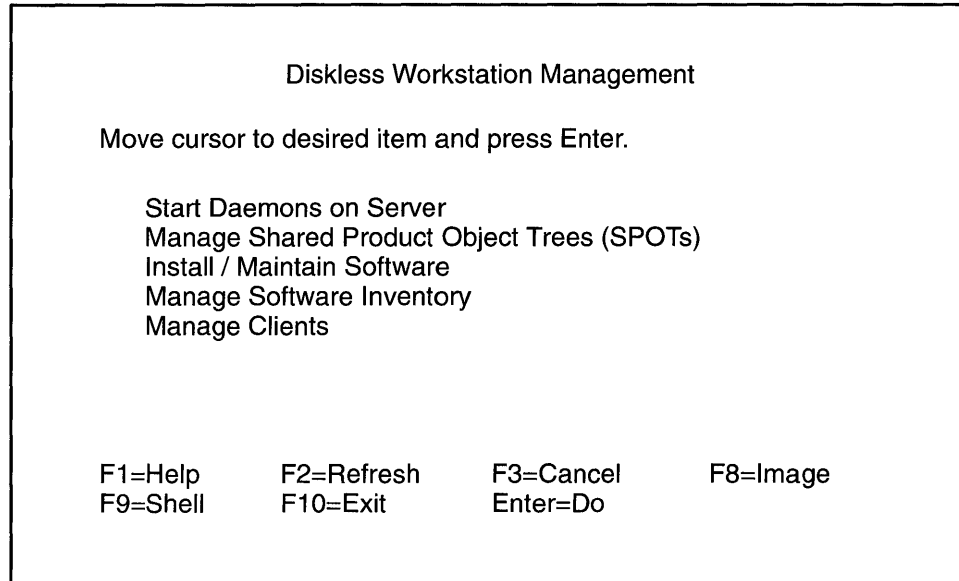
4. If you are installing from CD-ROM, tapes, or diskettes, insert the CD-ROM (in a disc caddy), tape, or diskette that contains your optional software into the drive.

5. Type the following:

`smit diskless` (or `smit -C diskless` if you are working in AIXwindows)

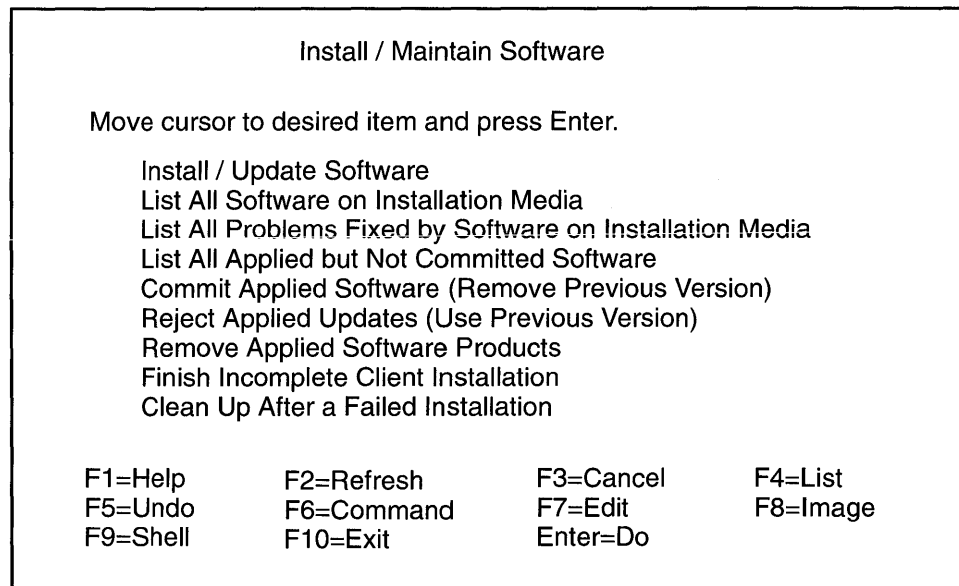
and press Enter.

A screen similar to the following is displayed:



6. Select **Install / Maintain Software**, and press Enter.

A screen similar to the following is displayed:



7. Select **Install / Update Software**, and press Enter.

A screen similar to the following is displayed:

Install / Update Software

Move cursor to desired item and press Enter.

Install Software With Updates
 Install Software Without Updates
 Install Updates Only

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

8. Select the appropriate option from the “Install/Update Software” menu.

In the following examples, the **Install Software With Updates** option has been selected from the “Install/Update Software” menu. This option allows you to install *both* optional software products and corrective service updates. The questions asked on the following screens, however, are similar if you select one of the other two options from this menu.

If you select the **Install Software With Updates** option from the “Install/Update Software” menu, a screen similar to the following is displayed:



Note: The list generated by the **SOFTWARE to install** option in step 13 will vary according to the option you select from the “Install/Update Software” menu. If you select the **Install Software Without Updates** option, only the optional software products will be listed. If you select the **Install Updates Only** option, only the updates will be listed.

Install Software With Updates

Type or select values in entry fields.
 Press Enter **AFTER** making all desired changes.

* SPOT (/usr) name [Entry Fields]
[] +

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

9. Press F4 to generate a list of SPOTS.

A screen similar to the following is displayed:

Install Software With Updates

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name [Entry Fields]
[] +

SPOT (/usr) name

Move cursor to desired item and press Enter.

engineers
composers

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

10. Move the cursor to the desired SPOT and press Enter.

A screen similar to the following is displayed:

Install Updates Only

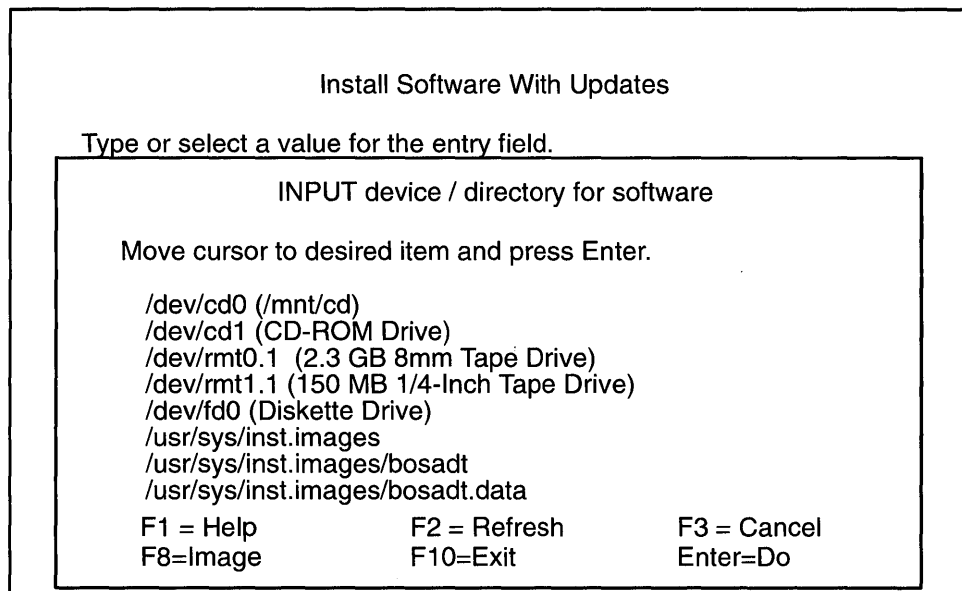
Type or select a value for the entry field.
Press Enter AFTER making all desired changes.

* INPUT device/directory for software [Entry Fields]
[] +

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

11. Press F4 to generate a list of installation device file names.

A screen similar to the following is displayed:



In this example, two CD-ROM drives are found in the system. The `/dev/cd0` device, which is mounted over the `/mnt/cd` directory, is included in the list with its mount point shown in parentheses. The `/dev/cd1` device either does not have a CD-ROM file system created for it, or it is not mounted.

In order to install software onto a client root, the diskless installation command `instlclient` overmounts certain directories and changes the root to be the client root for execution of the client installation. This means that an already mounted CD-ROM file system is not always accessible to the installation. Therefore, when a mounted CD-ROM file system is selected as the input device, it is first unmounted. Whether or not the selected CD-ROM device was already mounted, a CD-ROM file system is always created and mounted on a temporary mount point that can be accessed by the installation. After the installation is complete, the CD-ROM file system is mounted with its original mount point as appropriate.



Warning: If any process has its current directory on the CD-ROM file system or has any files open on the file system, the installation will fail when it tries to unmount the CD-ROM file system. You must make sure that the CD-ROM file system is not in use before starting the installation.

12. Move the cursor to highlight the device you are installing from. For example, if you are installing from a tape drive, you might select `/dev/rmt0.1`. After you have highlighted your choice, press Enter.

A screen similar to the following is displayed:


```

Install Software With Updates
Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name [Entry Fields]
                                composers

* INPUT device / directory for software /dev/rmt0.1
* SOFTWARE to install [all] +
Automatically install PREREQUISITE software? no +
COMMIT software? no +
SAVE replaced files? yes +
VERIFY software? no +
REMOVE input file after installation? no +

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

```

13. Move the cursor to the entry field for `SOFTWARE to install`. In this field you tell the system the names of the software products and options you want to install.

You have two ways to use this field:

- a. `all`— the default setting. This tells the system that you want to install *all* of the software and updates that are on the specified `INPUT` device or directory. If you want to install *all* of the software, go to step 17 on page 10-52.
- b. You can manually select *some* of the software. To see the list of the names of the software options available from the selected input device or directory, press `F4`.

14. After several minutes, a screen similar to the following is displayed:

```

SOFTWARE to install
Move cursor to desired item and press F7.
ONE OR MORE items can be selected.
Press Enter AFTER making all selections.
# Option Name          Level          I/U Q Content
#=====
# bosadt.all
# Description: Will include ALL the images for bosadt.
#
# bosadt.bosadt.data    03.02.0000.0000.    I  N  usr
# Base Application Development Toolkit.
#
# bosadt.xde.obj        03.02.0000.0000.    I  N  usr
# X window Development Environment.
#
# bosadt.prof.obj       03.02.0000.0000.    I  N  usr
# Base Profiling Support.
[MORE...]
F1 = Help          F2 = Refresh      F3 = Cancel
F7 = Edit          F8 = Image        F10 = Exit
Enter=Do

```

Note: The actual software list varies according to what software is on the input device you specify.

15. This list displays the names of the software products and updates you can select for installation. Read the rest of this step for an explanation of the contents of this screen. When you are ready to begin making selections from the list, go to the procedures in step 16.

The following headings describe the contents of this list:

Option Name Specifies the name of the software product option that can be selected for installation. The first part of the name (up to the first period) is an abbreviation for the software product. The second part is an abbreviation for an option within that software product. For example, `bosadt.bosadt.data` is the option name for the Base Application Development Toolkit software product option. For a complete listing of software products and their option names, refer to “Chapter 17. Product Information.”

Note: When the list is displayed, you will see that the first entry for each software product is `xxx.all`, where `xxx` is the specific software product name. If you select `xxx.all` for installation, then all of the options that start with the name `xxx` will be installed. In other words, all of the options listed after the `xxx.all` and up to the next software product will be installed automatically. For example, to install all of the Base Application Development Toolkit options, select `bosadt.all`. This will install all of the options that start with the name `bosadt`.

Level Specifies the code level number for this software release.

I/U Specifies whether the option is part of an installation package (I) or is part of an update package (G, S, or M). An update is software that fixes a defect in the product. There are three types of updates:

G Updates that are a part of the initial release of the product. Software products may not execute properly if “G” updates are not installed with the product.

S A Selective Fix. An update that fixes a specific defect in a product or contains a specific improvement for a product.

M A Preventative Maintenance package. This is a collection of fixes and/or improvements.

Q Represents quiescent or quiet. **Y** (yes) indicates that some software processes must be stopped before installing this option. **N** (no) indicates that it is not necessary to stop any software processes before installing this option. This indicator only tells you whether or not software processes need to be stopped. It does not indicate whether or not they actually are stopped. For a list of the processes that must be stopped, refer to “Chapter 17. Product Information.”

Content Specifies where the files for the option will be installed: the root (`/`), the `/usr`, or the `/usr/share` directories.

Description Describes the contents of the software product option.

This software listing may continue for several screens. The field headings are only displayed on the first screen. They are not displayed on subsequent screens. However, you can scroll back to the first screen to view them.

16. Refer to your Optional Software Installation worksheet for the list of software product options you chose to install. If you have not yet completed your plan, go to "Chapter 16. Planning" and then return here and continue. Scroll through the list of software using the PageUp/PageDown keys, or the arrow cursor keys, to find the first option you want to select.

- a. When the software you want to install is highlighted, press F7 to select it. The > (greater than) symbol appears next to each item that you select to indicate that it is selected for installation. You may select as many options as you want to install. To deselect a previously selected item, move the cursor to highlight that item and press F7.

Note: If you select a xxx.all option, a selection marker (>) will appear next to xxx.all, but no markers will appear next to the options covered by that xxx.all. By selecting the xxx.all option, all of the options with the same product name (the product name xxx) will be installed, even though they are not visibly marked.

- b. Continue scrolling through the list selecting all of the software you want to install.
- c. When you have finished selecting, scroll through the list again and double check that your selections are correct.



Note: If you exit this list and return to it again, then the list will be cleared of all previous selections. All your previous selections will be lost and you will have to start over and reselect the options.

- d. When you are sure that your selections are correct, press Enter.

A screen similar to the following is displayed:

Install Software With Updates

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]	
* SPOT (/usr) name	composers	
* INPUT device / directory for software	/dev/rmt0.1	
* SOFTWARE to install	[all]	+
Automatically install PREREQUISITE software?	No	+
COMMIT software?	No	+
SAVE replaced files?	Yes	+
VERIFY software?	No	+
REMOVE input file after installation?	No	+

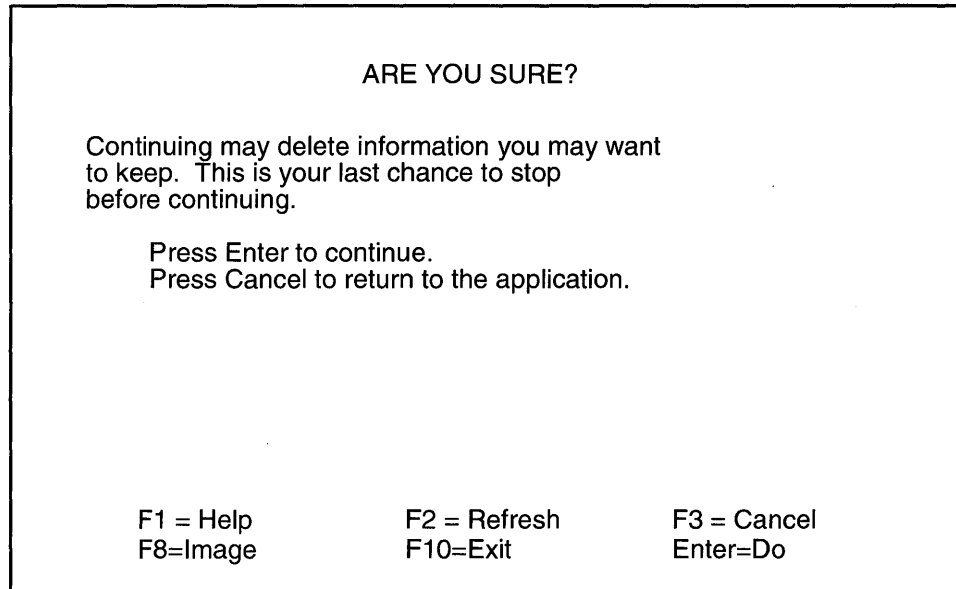
F1=Help	F2=Refresh	F3=Cancel	F4=List
F5=Undo	F6=Command	F7=Edit	F8=Image
F9=Shell	F10=Exit	Enter=Do	

17. The system automatically enters the default values for the remaining entry fields. Read the information in the following table to determine if you want to use the default settings.

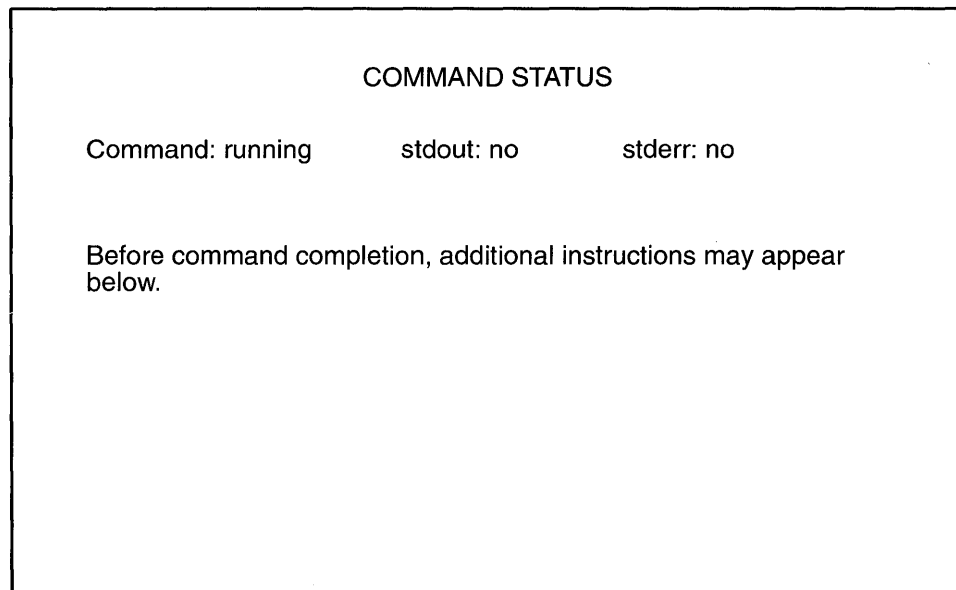
If you want to change the settings, move the cursor to the field and use the Tab key to toggle yes or no.

Entry Field	Yes	No
Automatically install PREREQUISITE software?	Automatically installs any software that is a prerequisite for the software products you choose to install.	(Default) Does <i>not</i> automatically install software that is a prerequisite for the software product you choose to install. If the system encounters a missing prerequisite for a software product, the installation of that option fails and the system lists the required prerequisites.
COMMIT software?	Commits all of the software products you choose to install.	(Default) Applies all of the software you choose to install, but does not commit them. When software is applied to the system, it becomes the active version of the software.
SAVE replaced files?	(Default) Saves existing copies (if any) of the software you are installing until the software is committed. In case of a failed installation, the cleanup procedure is used to retrieve software.	Does <i>not</i> save existing copies of the software you are installing. In case of a failed installation, the cleanup procedure cannot retrieve software. You must reinstall.
VERIFY software?	Instructs the system to perform a checksum in addition to the basic verification of files.	(Default) Instructs the system to <i>not</i> perform a checksum. Only a basic verification will be done. The checksum process can add a significant amount of time to the installation process.
REMOVE input file after installation?	(This option is only valid if you are installing from a file or directory on your system. If you are installing from tape, diskette, or network, choose the default, <code>no</code> .) Deletes the installation image files of the software products you are installing after installation is complete. An installation image file contains a copy (in backup format) of the software that you are installing and other files the system uses for installation. If you want to recover hard disk space, choose <code>yes</code> . Note: If <code>Automatically install PREREQUISITE software?</code> is set to <code>yes</code> , prerequisite software will also be removed.	(Default) Does <i>not</i> delete the installation image files of the software products that you are installing.

18. When you are satisfied with all the settings on this screen, press Enter to begin installing the software. A screen similar to the following is displayed:



19. If you are ready to begin installing, press Enter.
If you are not ready to begin installing, press F3 and return to step 13 on page 10-50.
A screen similar to the following is displayed:



A series of messages will appear as the installation process proceeds. The amount of time the installation process takes will vary according to the amount of software you are installing and the type of system that you have.

Note: During the installation process, the system may prompt you to insert the next tape or diskette by displaying a message similar to the following:

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

When this message appears, insert the specified tape or diskette into the input device and press Enter.

When the installation process finishes running, the `Command: status` indicator in the upper left corner of the screen will change from `running` to `OK` or `failed`. An `OK` indicator means that the installation process ran to completion (even though some options may not have installed successfully.) A `failed` means that the installation process did not complete.

20. When the installation process halts or finishes, the screen returns to the top of the list of messages that were generated during installation.
21. Search the message list to find any error messages that may have been produced or any software options that may not have been successfully installed during the installation process. Use the following function keys to review the system message list:
 - Home displays the start of the message list.
 - End displays the bottom line of text.
 - Page Down displays the next screen of text.
 - Page Up displays the previous screen of text.
 - The up and down arrow keys move through the message list line by line.
- a. Use the message list to determine if there were any problems during installation and which software products were involved. For example, space limitations may have been exceeded or prerequisites may not have been selected for some of the software that you chose to install. The system would list how much extra space was needed or what additional software products must be installed as prerequisites.
- b. If you have identified a problem with installing a particular software product or option, you are only required to reinstall the software that was marked “FAILED” or was missing from the “Install Summary” report. You should also select any prerequisites that may have been missed the first time. You do not need to reinstall the software that was marked “SUCCESS” in the summary report. If you need to perform the installation again, remove any tape or diskette from the drive, press F10 to exit SMIT, and return to step 4 on page 10-45 with the necessary corrections.
- c. If the installation was interrupted for any reason (for example, a power failure), you may need to use the cleanup procedure before continuing. Press F10 to exit SMIT and refer to “Chapter 21. Recovery Procedures,” section “Cleanup Procedure for Failed Optional Software Installations.”
- d. When all of your software has been installed successfully, continue with step 22.

22.If you are using diskettes and you have additional software products to install, remove the diskette, insert the first diskette of the software product you want to install, press F3, and return to step 13 on page 10-50. Otherwise continue with step 23.

23.Press F10 to exit SMIT.

24.If you are using a CD-ROM, tape, or diskette, eject it from the drive.

Where Do I Go Next?

If you are in the process of creating a new diskless community, continue with “Part 4: Starting a Diskless Client for the First Time” on page 10-60.

If you are updating software to a pre-existing diskless community and the documentation that came with the updates instructs you to reboot the system you are updating, you must reboot all the diskless clients of this SPOT.

If you are installing to a pre-existing diskless community, you are now done with the installation process.

B. Updating the Client Roots to be Consistent With the SPOT

This section describes how to use the menu which attempts to ensure that the software installed in all client roots is consistent with the level of the software installed in the SPOT. This is accomplished by performing the necessary applies, applies/commits, commits, or rejects on each client root in order to make that client consistent with the SPOT.

This section is primarily used to install, commit, or reject optional software and corrective service updates on the clients of a SPOT which is the server's `/usr` file system. In this case, optional software and updates must first be installed, committed, or rejected on the server through the "Standard Installation & Maintenance" menus. Then, you can continue with the update of the client root as described in this section.

The steps in this section can also be used to make the installed software consistent between a SPOT and its clients when the SPOT is not the server's `/usr` file system, and there is a client root that is inconsistent with the SPOT. When the SPOT is not the server's `/usr` file system, it is possible for the installed software to be inconsistent between the SPOT and one or more of its clients if any errors occurred during the installation process that prevented software that was installed in the SPOT from being installed in each of the client roots. To verify whether the software installed in the SPOT is consistent with all of the client roots, use the menu "Verify Consistent Installation Level" under the "Manage Software Inventory" menu under the "Diskless Workstation Management."

Use the following procedure to perform the necessary steps to make the client roots consistent with the software installed in the SPOT.

1. Type the following:

```
smit diskless_instupdt (or smit -C diskless_instupdt if you are working  
                        in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Install / Maintain Software

Move cursor to desired item and press Enter.

- Install / Update Software
- List All Software on Installation Media
- List All Problems Fixed by Software on Installation Media
- List All Applied but Not Committed Software
- Commit Applied Software (Remove Previous Version)
- Reject Applied Updates (Use Previous Version)
- Remove Applied Software Products
- Finish Incomplete Client Installation
- Clean Up After a Failed Installation

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

2. Select **Finish Incomplete Client Installation**, and press Enter.

A screen similar to the following is displayed:

Finish Incomplete Client Installation

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name [Entry Fields]
[] +

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

3. Press F4 to generate a list of SPOTS.

A screen similar to the following is displayed:

Finish Incomplete Client Installation

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* SPOT (/usr) name [Entry Fields]
[] +

SPOT (/usr) name

Move cursor to desired item and press Enter.

engineers
composers

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

4. Move the cursor to the desired SPOT and press Enter.
5. To finish the installation, press Enter again. The root portion of the software products for all clients will now be updated to be consistent with the SPOT.
6. When the `Command: status` indicator changes to `OK`, press F10 to exit SMIT.

If the installation was successful, you have finished the work necessary to make the optional software products and updates that are installed for each client root consistent with the products and updates installed in the SPOT.

Where Do I Go Next?

If you are in the process of creating a new diskless community, continue with “Part 4: Starting a Diskless Client for the First Time” on page 10-60.

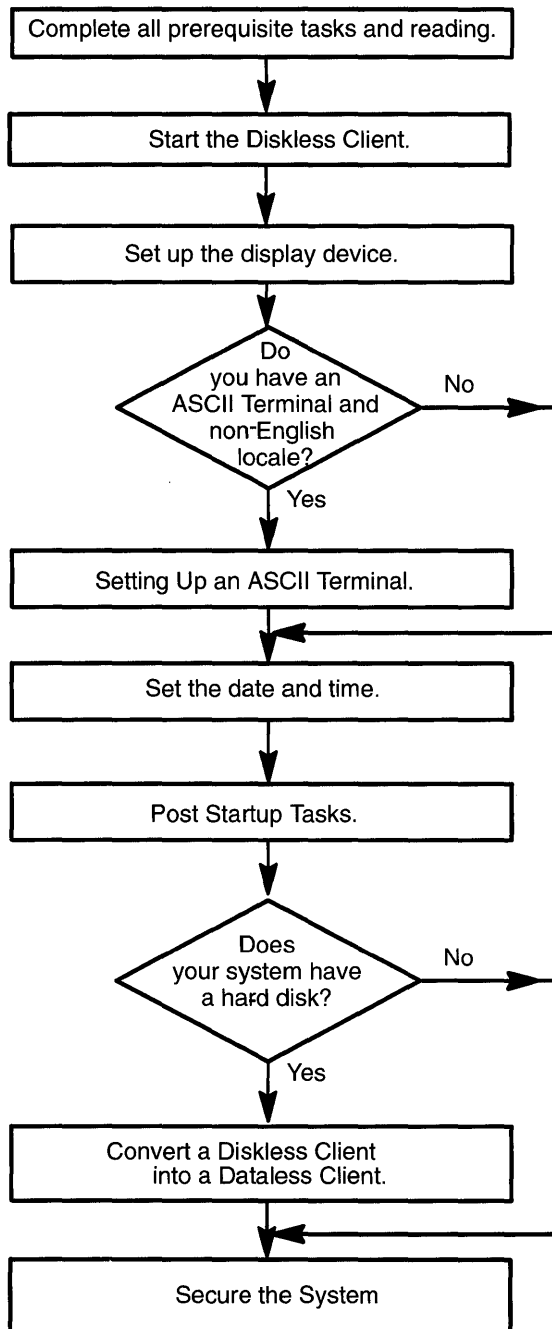
If you are updating software to a pre-existing diskless community and the documentation that came with the updates instructs you to reboot the system you are updating, you must reboot all the diskless clients of this SPOT.

If you are installing to a pre-existing diskless community, you are now done with the installation process.

Part 4: Starting a Diskless Client for the First Time

Flowchart for Starting a Diskless Client for the First Time

The flowchart show the basic steps you must perform to start a diskless client for the first time.



Prerequisite Tasks or Conditions

The following steps must be completed before you can begin the procedures in the following sections:

1. Each diskless client must have been added to the diskless server using the procedures in one of the Creating a Server sections in the front of this chapter.
2. All hardware is installed on the diskless client, including any optional devices such as external tape drives.
3. You should be familiar with the procedures for operating your hardware. If you are not familiar with your hardware, read "Chapter 18. Hardware Basics" and the setup guide that came with your hardware then return here and continue.
4. You need to understand how to use the System Management Interface Tool (SMIT). If you are not familiar with SMIT, you should read "Chapter 19. SMIT Basics" and return here and continue.
5. Locate the key for the key lock on your diskless client's system unit.
6. Continue with the next section, "Procedural Overview."

Procedural Overview

The following section contains instructions for starting a diskless client for the first time. The procedure in this section should be repeated on each diskless client the first time it is started. This chapter contains instructions for the following procedures:

- A. Start the Diskless Client
- B. Set up the Display Device
- C. Set Up an ASCII Terminal
- D. Set the Date and Time
- E. Post Startup Tasks
- F. Convert a Diskless Client into a Dataless Client
- G. Secure the System

Continue with the next section when you are ready to begin the installation.

A. Start the Diskless Client

1. Set the system unit power switch to the OFF position if it is not already off.
2. Turn the key to the SECURE position. Do not turn on the system unit.



Note: When you start your system, it is very important to turn on all external devices such as terminals, tape drives, CD-ROM drives, external disk drives, and monitors before turning on the system unit. You must power-on the equipment in this order, so the system unit can properly identify the attached devices during the startup (boot) process.

3. Turn on all attached devices, such as terminals, tape drives, monitors, and external disk drives.



Note: If you are using an ASCII terminal, make sure that the terminal's line speed (baud rate) = 9600, word length (bits per character) = 8, parity = no (none), and number of stop bits = 1.

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 the attributes. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set the attributes.

4. If the 3-digit LED display on your system unit is covered by a door, open the door so that you can see the display.
5. Set the system unit power switch to the ON position.
6. Wait for 200 to appear in the 3-digit LED display.
7. Turn the key to the SERVICE position.
8. Press the yellow reset button once.

After a minute, the MAIN MENU should appear.

9. If the MAIN MENU appears, skip to step 11. If it does not appear, continue with step 10.
10. If the numbers 261 and 262 appear in the 3-digit LED display and you are using an ASCII terminal, press one of the number keys at the top of the keyboard (*not* on the numeric keypad), and continue with step 11.

If the numbers 261 or 262 do not appear and you are not using an ASCII terminal, consult your *Problem Solving Guide*.

11. At the MAIN MENU menu, type:

1

and press Enter. (Note: Use the Enter or Return key that is above your right Shift key.)

The Select BOOT (Startup) Device menu should appear.

12. If you are booting over a Token-Ring network, continue with step 13.

If you are booting over an Ethernet network, skip to step 14.

13. For each Token-Ring adapter, you have two selections: 16 and 4 megabit data rates.
- Note:** It is very important that you select the correct data rate. An incorrect data rate may cause the total disruption of your network.
- Enter the number for the selection that corresponds to adapter and data rate combination that you want to use to communicate with your BOOTP server.
 - Skip to step 18.
14. For each Ethernet adapter, you may have three selections: thick, thin, and twisted pair cable. Type the number for the type of cable your network is using and press Enter.
- If you are starting a Powerstation 7011, continue with step 15.
- If you are not starting a Powerstation 7011, skip to step 18.
15. If you are using a thick cable, skip to step 17. If you are using a thin or twisted cable, continue with step 16.
16. The Type of Transceiver screen should appear.
- If you are using an IBM transceiver, type:
- 1
- or, if you are using a non-IBM transceiver, type:
- 2
- and press Enter.
17. The Heartbeat (SQE) Status screen should appear.
- If SQE is turned ON, type:
- 1
- or, if SQE is turned OFF, type:
- 2
- and press Enter.
18. The SET OR CHANGE NETWORK ADDRESS screen should appear. If you do not need to set or change any addresses, continue with step 19.
- If you do need to set or change any addresses, do the following:
- Note:** You must include any leading zeroes in the address. For example, if your address is 2.20.120.10, you must enter 002.020.120.010.
- Type the number in front of the address you want to change and press Enter.
 - Type in the address and press Enter.
 - Repeat steps a and b for each address you need to set or change. When you are finished, continue with step 19.
19. To return to the MAIN MENU, type:
- 99
- and press Enter.
20. To boot your diskless client, type the number for the selection "Exit Main Menu & Start System (boot)" and press Enter.
21. Turn the key to the NORMAL position and press Enter.

22. As the system begins to boot (which will take awhile), numbers are displayed in the 3-digit LED display.

If `c31` appears on the 3-digit LED display, each terminal and direct-attached display device attached to your system will show a message asking you to select your system console. Press the specified keys only on the console you want to use as your system console.

23. When a login prompt displays on your console, type:

```
root
```

and press Enter.

24. If your system unit's door was opened in step 4, you can close the door now.

25. If you are starting a Model 7011 for the first time, it is recommended that you run the diagnostic programs if you have not already done so. Refer to the *7011 Customer Setup Guide* for instructions on how to run the diagnostic programs. After you have finished running the diagnostic programs, return here and continue with the next section, "B. Set Up the Display Device."

Continue with the next section, "B. Set up the Display Device."

B. Set Up the Display Device

Before your system can communicate properly with your display device, it must know the type of display that you are using. The name of the type of display you are using is stored in your system in the `TERM` variable. You now need to check the `TERM` variable to see if it is correctly set.

1. If you are not already logged in as root, do so now.

2. Determine the model number for your display.

If you do not know the model number for your display, it will usually be printed as the "type" or "model" number on a plate on the front or back of the display.

3. To see what display name is stored in `TERM`, type the following:

```
echo $TERM (note that TERM is in capital letters),
```

and press Enter.

The system responds with the name of the display the system thinks you are using.

The following are possible responses to the **echo TERM** command:

If `TERM=dumb`, the system was unable to automatically recognize your display. You must manually set the display name. Go to step 4.

If `TERM=hft`, and you *are* using an hft such as a model 5081, 6091, or 8508, then go to the section "D. Set the Date and Time" on page 10-69. If you are not using an hft, go to step 4.

If `TERM=a` specific model number such as `ibm3151` and the number is correct, go to "C. Setting Up an ASCII Terminal" on page 10-67. If the number is wrong, go to step 4.

4. Use the following procedures to manually set the TERM name.
 - a. If you are using a VT100 terminal, then your TERM name is `vt100`. Skip to step d. If you are not using a VT100, continue with step b.
 - b. Display names must be typed in a specific format. To see the terminfo list of the valid display names, type the following:

```
ls /usr/share/lib/terminfo/x
```

(where *x* is the first letter (not capitalized) of the name of the manufacturer or type of your display.
For example, if you have an IBM display, you would type
`ls /usr/share/lib/terminfo/i`,
where *i* stands for IBM.)

and press Enter.

- c. Search the list and find the correct format for the name of your display and write it down. Make careful note on whether or not the letters are capitalized. For example, for a model 3151 display, the list will show "ibm3151" as the correct display name.
- d. Type the following:

```
export TERM=xxx
```

(where *xxx* is the exact display name that you copied from the terminfo list.)

and press Enter.

For example, if you are using a 3151, you would type `export TERM=ibm3151` and then press Enter.

5. The TERM name should now be set correctly. However, the name will only be stored until you log off (exit) from this session. If you want to avoid having to repeat step 4d every time you log on using this terminal, you should perform the following steps:

- a. Type the following:

```
tty
```

and press Enter.

The system will display the pathname of your display. For example, it may display `/dev/tty0`. The characters after the second "/" are the device name. In this example it is `tty0` (note that the last character in this example is a zero, not the letter "o").

- b. Type the following:

```
chdev -a term=xxx -l zzz
```

(where *xxx* is the display name you used in step 4d and *zzz* is the tty device name you found in step 5a.
Note: The `-l` in this command is a lowercase "L" and that "term" is in lowercase letters.)

and press Enter.

In our example, you would type `chdev -a term=ibm3151 -l tty0` and press Enter. The system responds with `tty0` changed.

Your terminal should now be set correctly. Continue with the next section, "C. Set Up an ASCII Terminal."

C. Set Up an ASCII Terminal

This section describes how to setup an ASCII terminal (tty device) for non-English locales (language) environments.

If you are using an hft such as model 5081, 6091, or 8508, you do not need to perform this procedure. Go to the section “D. Set the Date and Time” on page 10-69.

When an ASCII terminal is used with a non-English locale (language), all the characters may not display properly. Before you can use an ASCII terminal with a non-English locale, you must use the correct the input and output map files to convert the extended characters of your non-English locale to the characters supported by ASCII terminals. The name of the locale (language environment) is stored in your system in the LANG variable.

PROCEDURE

1. To see what locale (language) is stored in the LANG variable, type the following:

```
echo $LANG          (note that LANG is in capital letters)
```

and press Enter.

The system will display the name of your locale.

2. Is your locale name in this list?

C			{POSIX}
en_GB	or	En_GB	(Great Britain)
en_JP	or	En_JP	(Japan)
en_US	or	En_US	(United States)

YES: The system displayed one of the above locales, go to the next section “D. Set the Date and Time” on page 10-69.

NO: The system did *not* display one of the above locales, continue with step 3.

3. Is the first letter of the locale displayed by the **echo LANG** command a *lower* case letter?

YES: it's a *lower* case letter, go to the next section, “D. Set the Date and Time” on page 10-69.

NO: it's an *upper* case letter, continue with step 4.

4. To list the available map files, type the following:

```
ls /etc/nls/termmap
```

and press Enter.

5. Search the list and find the correct format for the name of your terminal and write down the name that precedes the “.in” suffix. Make careful note on whether or not the letters are capitalized.

For example, the input map file for a 3162 terminal with a language cartridge is “ibm3161-C.in.” The corresponding output map file is “ibm3161-C.out.” You would write down “ibm3161-C” for this example.

6. To see what tty device you are using, type the following:

```
tty
```

and press Enter.

The system will display the pathname the tty device. For example, it may display `/dev/tty0`. The characters after `/dev/tty` are the numbers identifying your tty device.

7. To set the input and output map files, type the following:

```
chdev -l ttyx -a imap=mapfile -a omap=mapfile
```

(where `-l` is a lower case "L", `x` is the number identifying your tty from step 6 and `mapfile` is the name you wrote down from the `termmap` listing in step 5) and press Enter.

For example, if you are using a 316X terminal on `/dev/tty0`, you would type:

```
chdev -l tty0 -a imap=ibm3161-C -a omap=ibm3161-C
```

and press Enter.

8. For this change to take effect, you must log off the system and then log back into the system. Perform the following steps:
 - a. At the system prompt (`#`), type the following:

```
exit
```

and press Enter.

The login prompt is displayed.

- b. To log back into the system, type the following:

```
root
```

and press Enter.

You have finished setting your ASCII terminal for use with Non-English locales. Continue with the next section, "D. Set the Date and Time."

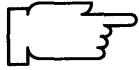
D. Set the Date and Time

1. Type the following:

`date`

and press Enter.

The system displays the date and time.



Note: Time on your system is expressed in terms of a 24-hour clock, often called “military time.” In a 24-hour clock system, the clock time starts with 00:00 hours, which is the same as 12:00 a.m., and continues counting until 23:59 hours, which is the same as 11:59 p.m.

- If the date and time are correct, go to “E. Post Startup Tasks” on page 10-72.
- To change the date and time, go to step 2.

2. Type the following:

`smit chtz` (or `smit -C chtz` if you are working in AIXwindows)

and press Enter.

A screen similar to the following is displayed:

Use DAYLIGHT SAVINGS TIME?

Move cursor to desired item and press Enter.

Does this time zone go on

DAYLIGHT SAVINGS TIME?

#

1 yes

2 no

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

3. You have two choices:

- If your time zone uses daylight savings time, move the cursor to *yes* and press Enter.
- If your time zone does *not* use daylight savings time, move the cursor to *no* and press Enter.

A screen similar to the following is displayed:

CUT (Coordinated Universal Time) Time Zone

Move cursor to desired item and press Enter.

[TOP]

(CUT0GDT)	Coordinated Universal Time	(CUT)
(TZ 1DT1)	Azores; Cape Verde	(CUT -1)
(TZ 2DT2)	Falkland Islands	(CUT -2)
(TZ 3DT3)	Greenland; East Brazil	(CUT -3)
(AST4ADT)	Central Brazil	(CUT -4)
(EST5EDT)	Eastern U.S.; Columbia	(CUT -5)
(CST6CDT)	Central U.S.; Honduras	(CUT -6)

[MORE...12]

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

4. Move the cursor to highlight your time zone and press Enter. Use the up and down cursor arrows to scroll through the screens and display more time zones. After you press Enter, a screen similar to the following is displayed:

Change / Show Date, Time, & Time Zone

Type or select values in entry fields.
Press Enter AFTER making all Desired changes.

Old time zone	[Entry Fields]
Time Zone	CST6CDT
Does this time zone go on daylight savings time?	yes

* YEAR (00-99)	[91]
* MONTH (01-12)	[04]
* DAY (01-31)	[15]

* HOUR (00-23)	[11]
* MINUTES (00-59)	[32]
* SECONDS (00-59)	[05]

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

5. Do *not* press Enter until you have finished making *all* the necessary changes to this screen. Move the cursor to the entry fields you want to change, and type the new information for each field.

Note: Remember that you must use the 24-hour clock times for the HOUR field.

When you press Enter, a screen similar to the following is displayed:

```

                                COMMAND STATUS
Command: OK      stdout: yes      stderr: no

Before completion, additional instructions may appear below

Mon Apr 15 11:32:05 CST 1991

Now exit SMIT and log out and then back in so that any changes to date,
time, and time zone will be reflected in your current session.

F1=Help      F2=Refresh      F3=Cancel      F6=Command
F8=Image     F9=Shell        F10=Exit
```

6. Press F10 to exit SMIT.
7. If you changed the time zone, you must log off of the system and then log back in so that the new time zone can take effect. Perform the following steps:
 - a. At the system prompt (#), type the following:

```
exit
```

and press Enter.
The login prompt is displayed.
 - b. To log back into the system, type the following:

```
root
```

and press Enter.
8. Go to the next section "E. Post Startup Tasks."

E. Post Startup Tasks

Accessing InfoExplorer

InfoExplorer is your on-line hypertext information library. It contains thousands of pages of documentation you can read and search from your system display. There are two ways that InfoExplorer can be made available. It can be installed on your diskless server's hard disks, or you can read it from a CD-ROM disc drive. If a CD-ROM disc drive is attached to your client system, go to "Chapter 13. Mounting the InfoExplorer CD-ROM" and follow the procedures for mounting a CD-ROM file system. Then, return here and continue.

Changing Your Language Environment

If you wish to change your language environment or change the code set associated with your environment, consult the following InfoExplorer articles:

- "How to Change Your Locale"
- "Understanding Code Set Strategy"

Configuring Your System for Network Communications

Although you have booted your diskless client over a network, TCP/IP and NFS are not yet configured. You must configure TCP/IP and NFS before you have full network functionality.

If the TCP/IP and NFS software products are not installed, you will have to install the "Base Operating System Network Facilities (BOSNET)" optional software product. Go to the section in this chapter titled "Part 3. Install and Update Optional Software" on page 10-37 and follow the procedures for installing your optional software products. Use the `lslpp -l bosnet.*` command to determine if TCP/IP and NFS are installed.

If you want to configure the TCP/IP and NFS software products, go to "Chapter 14. Network Configuration" and follow the instructions for configuring TCP/IP and NFS. Then, return here and continue with the next section.

Verifying Client Access to Server's Resources

There are several server resources that your diskless client uses: optional software products, file systems, and paging space. You can enter the following commands to check these resources:

- `lslpp -l` (shows optional program products)
- `mount` (shows file systems)
- `lsps -a` (shows paging space).

Continue with the next section "Changing root's Password."

Changing root's Password

When choosing a password, choose one you can easily remember, but is difficult for someone else to guess.

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
passwd
```

and press Enter.
3. Type the password you want to use for root and press Enter.

4. The system prompts you to enter the password again. Type the password exactly as you typed it in step 3 and press Enter.

Continue with the next section “Creating Users.”

Creating Users

If root is the only user on your system, you should now create a nonroot user name for your everyday use. Using the root login for everyday tasks increases the possibility that you will accidentally corrupt your system due the root user’s ability to run system commands. You should create a nonroot account for use when you are performing non-administrator tasks such as running applications. In addition, you should also create user accounts for any other people who want to use the system.

1. To add new user accounts, use the **smit mkuser** command.
 - a. Type the following:

```
smit mkuser
```

and press Enter.

The Create User screen should appear.
 - b. The `User NAME` field is highlighted. Type the name of the user you want to add and press Enter.

The Command Status screen should appear.
 - c. If you want to add another user, press F3 and repeat step b. If you are finished adding new users, press F10 to exit SMIT and continue with step 2.
2. From the system prompt, type the following to set the new user’s password:

```
passwd username
```

(where `username` is the name of the user created in step 1)
and press Enter.
3. The system will then prompt you to type in a password for the user. Type the password for the user and press Enter.
4. The system prompts you to enter the password again. Type the password exactly as you typed it in step 3 and press Enter.
5. Repeat steps 2 and 4 to set the password for each new user.
6. The user name is now ready for use to login to the system. The first time the username is used the system will prompt the user to select a new password. This is done so that the root administrator will not know the user’s password.

Where Do I Go Next?

Do you have a hard disk installed on your client?

NO: Go to section “G. Secure the System” on page10-76.

YES: Go to the next section, “F. Convert a Diskless Client into a Dataless Client”.

F. Convert a Diskless Client into a Dataless Client

This section describes how to convert a diskless client into a dataless client. A diskless client uses the server's hard drives for paging and writing the dump file. A dataless uses its own hard drive for paging and writing a dump file.

PROCEDURE

You must have a hard drive installed on your client system to complete this procedure.

1. If the client's system power unit is OFF, turn on all attached devices, turn the key to the NORMAL position and set the system power unit to the ON position.
2. If you are not already logged in as root on the *client* machine, log in as root now.
3. On the *client* machine, type the following:

```
lsdev -Ccdisk
```

and press Enter.

4. On the *client* machine, type the following:

```
mkdataless -v hdiskx
```

(where *x* is the number of the hard drive you want to use from the list in step 3)

and press Enter.



Note: Converting a diskless client into a dataless client will take several minutes.

5. On the *client* machine, type the following:

```
shutdown -F
```

and press Enter.



Note: You must wait until the `Halt Completed` message is displayed. It is important that the client machine has successfully halted before you remove the client's paging and dump space on the server.

6. Go to your diskless server. If you are not already logged in as root on the diskless server, log in as root now.

7. On the *server* machine, type the following:

```
rmclient -dpv ClientName
```

(where *ClientName* is the name of the client that you want to convert into a dataless client)

and press Enter.

8. Go to your client machine. Is the client's system power unit ON?

YES: on the client machine, press the reset button to boot the client.

NO: on the client machine, turn on all attached devices, turn the key to the NORMAL position and set the system power unit to the ON position.

9. After the client machine boots, log in as root.

10. On the *client* machine, type the following:

```
rmfs swapnfs0
```

and press Enter.

11. On the *client* machine, type the following to list your paging space:

```
lspfs -a
```

and press Enter.

Your client now uses its local hard disk for paging.

You have finished converting a diskless client into a dataless client. Continue with the next section, "G. Secure the System."

G. Secure the System

At this point, you may want to turn your system unit key switch to the **SECURE** position and remove the key. There are two reasons why you may want to do this:

- When the system unit key switch is in the **SECURE** position, the reset button is not active and someone cannot accidentally press the reset button and cause a loss of data.
- When the key switch is in the **SECURE** position, you can prevent someone from rebooting your system and attempting to gain unauthorized access to your system. If you start the system while the key switch is in the **SECURE** position, the booting process stops and **200** appears in the three-digit LED display. The system does not perform any further operations until the key switch is set to the **NORMAL** or **SERVICE** positions.

If you want to prevent accidental resets and make your system more secure, turn your key to the **SECURE** position and remove it.

You are finished with this chapter.

Part II. Supplementary Installation Procedures

Chapter 11. Creating BOSboot Diskettes



Note: The procedures in this chapter are for use if you are running Version 3.2. If you want to create BOSboot diskettes for an earlier version, you must use the documentation for that version.

In order to maintain your Version 3.2 Base Operating System (BOS) after it is installed, you may need the following BOSboot diskettes:

- Boot diskette — This is used to start (boot) your system from your diskette drive in case your system can no longer boot itself from the hard disk.
- Display diskette — This is used to set up your display device.
- Install/Maintenance diskette — Contains a subset of system commands that are used to install software and solve system problems.
- Display Extensions diskette — This is an additional display diskette that is needed *only* if you have one of the following graphics adapters installed in your system:
 - POWER Gt3 Midrange graphics adapter
 - POWER Gt4 Midrange graphics adapter
 - POWER Gt4x Midrange graphics adapter
 - High Speed 3D Graphics Accelerator
 - Any any other graphics adapter.

Note: You can check your system hardware list with the `lsdev -Cs mca` command or refer to your “About Your Machine” document to determine if you have the graphics adapters installed in your system.



Note: Special notice for Kanji (Japanese Locale) users: You do not need to create these diskettes. Kanji systems use the standard National Language Services diskettes to boot and install the Version 3.2.

Note: These diskettes will be version-specific. They will only work with a copy of BOS that has the same version number as the BOS that created them.

PROCEDURE:

1. Format four blank diskettes, if you are using a graphics adapter that requires the BOS Display Extensions diskette. If you are not using one of these adapters, you only need to format three diskettes.
 - a. At the system prompt, type the following:

```
format
```

and press Enter.
 - b. When prompted on-screen, insert a blank diskette into the diskette drive and press Enter.

Note: The diskettes must have a minimum capacity of 1.44MB.
 - c. When the formatting is done the message `Format completed` appears and the system prompt reappears. Remove the diskette.
 - d. Repeat steps a through c until all of the diskettes are formatted.

2. To create the BOS Boot diskette:
 - a. Insert a formatted diskette into your diskette drive.
 - b. Type the following line (note that the last character in the line is a zero):

```
bosboot -a -d fd0
```

and then press Enter.
 - c. After a minute, system messages appear on the display as the boot diskette is created.
 - d. When the system prompt reappears, remove the diskette from the drive and label it "BOS Boot, Version 3.2." It is very important that you include the version numbers on the labels of these diskettes. These diskettes will only work on a BOS that has the same version number.
3. To create the BOS Display diskette:
 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:

```
mkdispdskt
```

and then press Enter.
 - c. The message `Mount Volume 1 on /dev/rfd0. Press Enter to Continue.` appears. Leave the diskette in the drive and press Enter.
 - d. After a minute, system messages appear. When the system prompt reappears, remove the diskette from the drive and label it "BOS Display, Version 3.2."
4. To create the BOS Install/Maintenance diskette:
 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:

```
mkinstdskt
```

and then press Enter.
 - c. After a minute, system messages appear. When the system prompt reappears, remove the diskette from the drive and label it "BOS Install/Maintenance, Version 3.2."
 - d. If you have a graphics adapter that requires the Display Extensions diskette, continue with step 5.
If you do *not* need this diskette, go to step 6.

5. To create the BOS Display Extensions diskette:
 - a. Insert a formatted diskette into the diskette drive.
 - b. Type the following:

```
mkextdskt
```

and then press Enter.
 - c. The message `Mount Volume 1 on /dev/rfd0. Press Enter to Continue.` appears. Leave the diskette in the drive and press Enter.
 - d. After a minute system messages appear. When the system prompt reappears, remove the diskette from the drive and label it "BOS Display Extensions, Version 3.2."
6. Write-protect all of the diskettes that you have created by sliding the write-protect tab open.

You have finished creating the primary diskettes.

NOTES

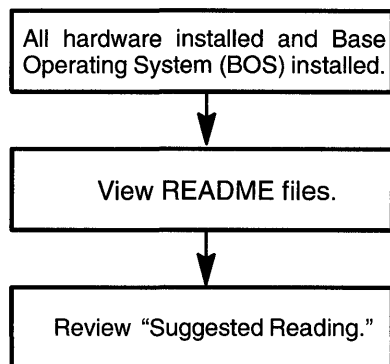
Chapter 12. Viewing README Files

This chapter describes how to view the README files. A README file is an on-line reference for late-breaking information about your software products. README files contain information that is not included in other documentation. It is important that you view these files before you begin to use your system.

There is a README file for the Version 3.2 Base Operating System (BOS). Each software product may also have its own README file containing information specific to that product that is not included in other documentation.

Flowchart for Viewing README Files

This chart shows the basic steps that will be covered in this chapter.



A. Prerequisite Tasks or Conditions

1. All hardware is installed.
2. The Base Operating System (BOS) is installed.

B. View the README Files

Use the following procedure to view the README files for Base Operating System (BOS) software and optional software products.

PROCEDURE

1. If you are not already logged in as root, log in as root now.
2. At the system prompt (#), type the following:

```
cd /usr/lpp
```

and press Enter.

3. Type the following:

```
ls */*README*
```

and press Enter.

The system lists the README files for each software product installed on your system.

4. Perform the following steps to access and exit specific README files.
 - a. To view a README file of a specific software product, type the following:

```
pg xxx/README
```

 (where *xxx* is the directory name associated with a particular software product)
and press Enter.
 - b. After the copyright screen appears, press Enter.
 - c. To scroll through the README file that you have selected, use the following keys or key combinations:

To page down	Press Enter
To page up	Press the minus (-) key and press Enter.
To move forward x pages	Type the plus (+) key and the number of pages and then press Enter. For example, to move forward five pages, you would type +5 and press Enter.
To move backward x pages	Type the minus (-) key and the number of pages and then press Enter. For example, to move backward five pages, you would type -5 and press Enter.

d. To exit the README file, at the colon (:) prompt, type the following:

q

and press Enter.

C. Suggested Reading

After your system is installed, you can use InfoExplorer, your on-line hypertext information library, to learn more about your system. You can step through the InfoExplorer menus or use the search function to locate information such as command names and article titles. You can also look for information in the hardcopy manuals that you may have ordered with your system.

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter.

The **pg** command, **ls** command.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *General Concepts and Procedures* provides information on file system types and management.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000*.

Using SMIT in *Getting Started: Managing the IBM RISC System/6000*.

IBM RISC System/6000 Problem Solving Guide.

Chapter 13. Mounting the InfoExplorer CD-ROM

Be sure to alter all references to “English (United States)” and “En_US” to the appropriate references for your language

This chapter describes how to access the InfoExplorer Databases after your system is installed. The InfoExplorer Databases are your on-line hypertext information library. They contain conceptual, procedural, and reference information about your system. The InfoExplorer Databases are separately installable options of a software product. They must be installed through SMIT before you can access them.

This chapter describes how to access the InfoExplorer Databases from your hard disk and from a CD-ROM. The chapter includes the following sections:

- A . Prerequisite Tasks or Conditions.
Details the tasks that must be completed or conditions that must be met before you can use this procedure.
- B . Fast Path.
Outlines a fast path through the procedure for experienced users.
- C . Accessing InfoExplorer from Hard Disk.
Describes how to access the InfoExplorer Databases from your hard disk.
- D . Accessing InfoExplorer from CD-ROM the First Time.
Describes how to access the InfoExplorer Databases from your CD-ROM for the first time.
- E . Suggested Reading
Lists helpful reference information.

A. Prerequisite Tasks or Conditions

1. Your Version 3.2 Base Operating System (BOS) is installed.
2. The bos.data option for BOS must already be installed.

Note: This option is *not* automatically installed when you install BOS. It must be installed when you install optional software.

If you want to see if bos.data is already installed, type the following:

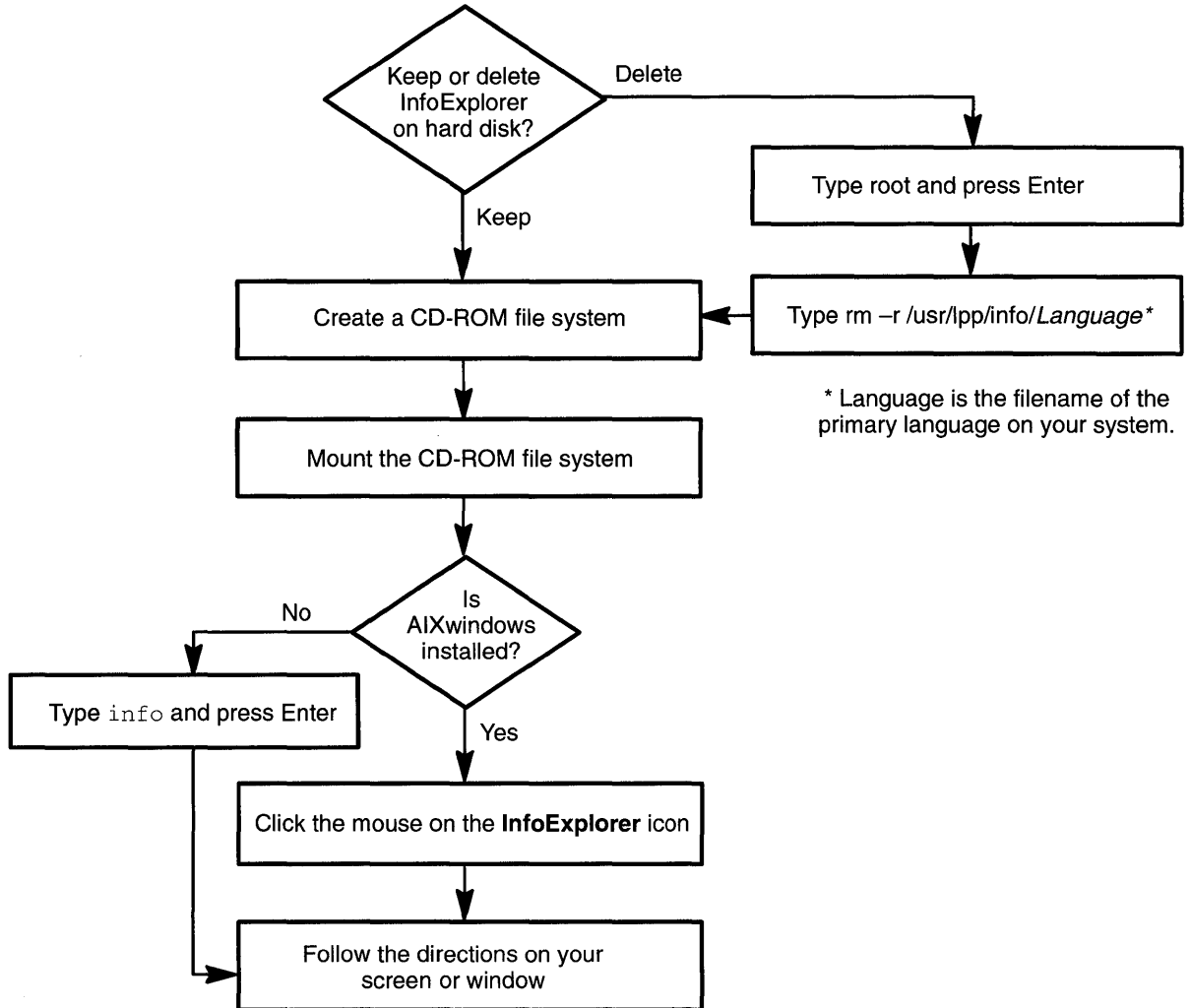
```
lslpp -l bos.data (Note: The term -l is a lowercase "L" not the numeral "1.")
```

If you need to install bos.data, you will need to use the procedures for installing optional software products. To determine which Optional Software Installation chapter is the appropriate one for you to use, go to "Where Do I Go in This Manual?" on page 0-1 (immediately following the Table of Contents).

3. You received the following with your CD-ROM copy of InfoExplorer:
 - Plastic shipping case labelled "CD-ROM Hypertext Information Base Library," containing:
 - CD-ROM disc labelled "Hypertext Information Base Library"
 - CD-ROM instruction booklet
 - Plastic disc caddy.
4. Read the instruction booklet located in the plastic shipping case containing your CD-ROM Hypertext Information Base Library. The slide-out instruction booklet is also the CD-ROM shipping case label.

B. Flowchart for Mounting the InfoExplorer CD-ROM

This flowchart outlines the steps to access InfoExplorer from your hard disk or CD-ROM.



C. Accessing InfoExplorer from Hard Disk

This section describes two methods for accessing InfoExplorer from your hard disk, depending upon whether or not you are running an AIXwindows desktop.

Use the following steps to access InfoExplorer from an AIXwindows desktop:

1. Move the mouse pointer to the icon labeled InfoExplorer.
 - a. Click the left mouse button twice.

The InfoExplorer Welcome window is displayed.

- b. Follow the directions in the window.

Use the following steps to access InfoExplorer if you are *not* running an AIXwindows desktop:

1. At the system prompt, type the following:

```
info
```

and press Enter.

The InfoExplorer Welcome window displays.

2. Follow the directions on the screen.

D. Accessing InfoExplorer from CD-ROM the First Time

The first time you access InfoExplorer from your CD-ROM, you must do the following:

- Create a CD-ROM file system.
- Mount the CD-ROM file system.
- Choose whether to keep or delete the InfoExplorer Databases on your hard disk.

When these steps are complete, you can access InfoExplorer from your CD-ROM at any time using the procedure in the section titled "Accessing the InfoExplorer Databases" on page 13-10.

This procedure includes the following sections:

Creating a CD-ROM File System.

Describes how to create a CD-ROM file system.

Mounting the CD-ROM File System.

Describes how to mount your CD-ROM to the file system you created.

Deleting InfoExplorer from Your Hard Disk.

Describes how to delete the InfoExplorer Databases from your hard disk.

Accessing the InfoExplorer Databases.

Describes how to access the InfoExplorer Databases.

Creating a CD-ROM File System

This section describes how to create a file system to which you can mount your CD-ROM.

1. If you are using an external CD-ROM drive, be sure the power switch is set to ON.
2. Remove the CD-ROM from the plastic shipping case and place it in the plastic disc caddy.
3. Insert the plastic disc caddy containing the CD-ROM into the disk drive.
4. Create the CD-ROM file system by typing the following:

```
smit crcdrfs
```

and press Enter.

A screen similar to the following is displayed:

Add a CD-ROM File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]	
* DEVICE name		+
* MOUNT POINT	[]	+
Mount AUTOMATICALLY at system restart?	no	+

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

5. Press F4 to list all available devices. A screen similar to the following is displayed:

Add a CD-ROM File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

[Entry Fields]

* DEVICE name +

* MOUNT POINT [] +

DEVICE name

Move cursor to desired item and press Enter.

cd0

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

6. Move the cursor to highlight the CD-ROM device you plan to use and press Enter.
7. Move the cursor to the MOUNT POINT entry field.
8. Type the following:
(where *Language* is the name of the language you are using)
`/usr/lpp/info/Language`
Do not press Enter.
For example, if you want to use United States English, you would type the following:
`/usr/lpp/info/En_US`
9. Move the cursor to Mount AUTOMATICALLY at system restart?
You have two choices:
 - a. To mount InfoExplorer every time you start the system, press the Tab key to change the answer to `yes`.
 - b. To mount manually when you need InfoExplorer, leave the entry field set to `no`, the default value.
10. When you have finished making *all* changes to all the entry fields, press Enter.
The `/etc/filesystems` file now contains the CD-ROM entry for InfoExplorer.
11. Press F10 to exit SMIT.
12. Go to the next section called "Mounting the CD-ROM File System."

Mounting the CD-ROM File System

This section describes how to mount your CD-ROM to the file system you created.

1. At the system prompt, type the following:

```
smit mountfs
```

and press Enter.

A screen similar to the following is displayed:

Mount a File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]	
* FILESYSTEM name	[]	+
DIRECTORY over which to mount	[]	+
TYPE of file system		
FORCE the mount?	no	+
REMOTE NODE containing the file system to mount	[]	+
Mount as a REMOVABLE file system?	no	+
Mount as a READ ONLY file system?	no	+

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

2. The cursor is now located in the FILESYSTEM name entry field.

Press F4 to list file system names.

A screen similar to the following is displayed:

Mount a File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]	
* FILESYSTEM name	[]	+
DIRECTORY over which to mount	[]	+
TYPE of file system		

FILE SYSTEM name

Move cursor to desired item and press Enter.

/dev/hd7	/mnt	jfs
/usr/bin/blv.fs	/usr/bin/blv.fs	jfs
/dev/cd0	/usr/lpp/info/En_US	cdrfs

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

3. Move the cursor to highlight a line similar to the following:
(where *x* is the number of your CD-ROM drive and *Language* is the name of the language you are using.)

```
/dev/cdx /usr/lpp/info/Language cdrfs
```

For example, if your primary language is English (United States), you would select the following line:

```
/dev/cd0 /usr/lpp/info/En_US cdrfs.
```

and press Enter.

4. To begin the CD-ROM mount process, press Enter.
5. When the command status field says OK, press F10 to exit SMIT.
6. Type the following:

```
cd /usr/share/info/data
```

and press Enter.

7. Type the following:

```
cp ispaths.full ispaths
```

and press Enter.

The **/usr/lpp/info/*Language*** file is now mounted and the InfoExplorer Databases are available.

8. Go to the next section, "Deleting InfoExplorer from Your Hard Disk."

Deleting InfoExplorer from Your Hard Disk

During installation, the InfoExplorer Databases may have been stored on your hard disk. You can keep this copy of InfoExplorer Databases in case your CD-ROM becomes inaccessible at some time, or you can delete it.

If you want to delete the InfoExplorer Databases from your hard disk, perform the following steps:

1. At a system prompt, type the following:

```
smit umountfs
```

and press Enter.

A screen similar to the following is displayed:

```

                                Unmount a File System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                [Entry Fields]
Unmount ALL mounted file systems?      no      +
(except /, /tmp, /usr)

-OR-
Unmount REMOTELY mounted file systems? no      +

NAME of file system to unmount         [ ]
REMOTE NODE containing the file system(s) [ ]      +
to unmount

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

```

2. Move the cursor to `NAME` of file system to unmount, and press F4.
A screen similar to the following is displayed:

```

                                Unmount a File Sys-
                                tem
Type or select values in entry fields.
Press Enter AFTER making all desired changes.

                                [Entry Fields]
Unmount ALL mounted file systems?      no      +
(except /, /tmp, /usr)

-OR-

                                NAME of file system to un-
                                Move cursor to desired item and press Enter.
                                /
                                /usr
                                /var
                                /tmp
                                /home
                                /usr/lpp/info/En_US
F1=Help      F2=Refresh      F3=Cancel
F8=Image     F10=Exit        Enter=Do

```

3. Move the cursor to `/usr/lpp/info/Language`, where *Language* is the name of the language that you are using, and press Enter.
4. To unmount the file system, press Enter again.
5. Press F10 to exit SMIT.
6. To remove the InfoExplorer databases, type the following:
(where *Language* is the name of the language you are using.)

```
rm -r /usr/lpp/info/Language/*
```
7. Go to the next section, "Accessing the InfoExplorer Databases from CD-ROM."

Accessing the InfoExplorer Databases from CD-ROM

This section describes two methods for starting the InfoExplorer Databases from your CD-ROM, depending upon whether or not an AIXwindows desktop is running.

- To access the InfoExplorer from an AIXwindows desktop:
 1. Be sure that your CD-ROM is mounted and the disc caddy is in the drive.
 2. Move the mouse pointer to the icon labeled **InfoExplorer**.
 3. Click the left mouse button twice.

The InfoExplorer Welcome window is displayed.

4. Follow the directions in the window.

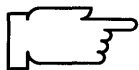
- To access the InfoExplorer when an AIXwindows desktop is *not* running:
 1. Be sure that your CD-ROM is mounted and the disc caddy is in the drive.
 2. At the system prompt, type the following:

```
info
```

and press Enter.

The InfoExplorer Welcome window is displayed.

3. Follow the directions on the screen.



Warning: If the CD-ROM disk is ejected from the CD-ROM drive for any reason while it is still mounted, the mount connection is broken and you can no longer use InfoExplorer. When you reinsert the InfoExplorer CD-ROM disk, you must use the following procedure to re-access the CD-ROM.

1. First, you must unmount the broken mount to the CD-ROM file system.

Type the following:

(where *Language* is the name of the language that you are using)

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

and press Enter.

2. Now that the broken connection is removed, go back to step 1 of the "Mounting the CD-ROM File System" procedure and repeat the procedure.

E. Suggested Reading

Using InfoExplorer on a Graphics Display in *Getting Started: Using the IBM RISC System/6000*.

Using InfoExplorer on an ASCII Display in *Getting Started: Using the IBM RISC System/6000*.

Chapter 14. Network Configuration

This chapter describes how to configure your Transmission Control Protocol/Internet Protocol (TCP/IP) and Network File System (NFS) software so that your system can communicate over a network. If you are using a different protocol for network communications, refer to the documentation for that protocol to configure your system.

This chapter contains the following five sections:

Configure TCP/IP page14-2
This procedure describes how to configure TCP/IP for network communications.

Configure NFS page14-10
This procedure describes how to configure NFS for network communications. Both the client and server must perform this procedure.

Configure a NFS Server page 14-13
This procedure describes how to export a directory within a file system on a server so that a client can mount it through NFS.

Configure a NFS Client page 14-15
This procedure describes how to mount a NFS file system from the server on the client.

Suggested Reading page 14-17
This section lists helpful reference information.

Configure TCP/IP

If you installed the TCP/IP and NFS software, you can configure your system to communicate over a network. This section describes how to use SMIT to configure TCP/IP after it is installed.

This procedure is *only* intended to be used *once* for startup. If you need to change the TCP/IP configuration, use the TCP/IP Further Configuration menu in SMIT.

A. Prerequisite Tasks or Conditions

1. The Version 3.2 Base Operating System is installed.
2. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to "Chapter 19. SMIT Basics."
3. The TCP/IP software must be installed. If you need to install this software, you will have to install the "Base Operating System Network Facilities (BOSNET)" optional software product. Go to "Chapter 6. Optional Software Installation" and following the procedures for installing optional software products; then return here and continue with step 4.
4. The TCP/IP plan must have been completed. Go to "Chapter 16. Planning" and complete the TCP/IP plan; then return here and continue with the next section, "B. Configuring TCP/IP."

B. Configuring TCP/IP

PROCEDURE:

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit tcpip (or smit -C tcpip if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

TCP/IP

Move cursor to desired item and press Enter.

Minimum Configuration & Startup
Further Configuration

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

3. Minimum Configuration & Startup is highlighted. Press Enter to select it.
A screen similar to the following is displayed:

```

TCP/IP

Minimum Configuration & Startup
Further Configuration

Available Network Interfaces

Move cursor to desired item and press Enter.

en0    Ethernet Network Interface
et0    IEEE 802.3 Network Interface
tr0    Token-Ring Network Interface

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

```

This is a list of the available network interfaces that your system can use for network communications.

Note: The content of this list varies according to what is installed on your system.

4. Move the cursor to highlight the type of interface you are using for network communications and press Enter.

The Minimum Configuration & Startup screen will appear. The exact contents of this screen will depend on the type of network adapter you selected. For example, if you selected the Token-Ring Network Interface, a screen similar to the following is displayed:

```

Minimum Configuration & Startup

To delete existing configuration data, please use Further Configuration me-
nus.

Type or select values in entry fields.
Press Enter AFTER making all desired changes. [Entry Fields]
* [fiat]
* HOSTNAME [192.100.165.23]
* Internet ADDRESS (dotted decimal) [255.255.255.0]
* Network MASK (dotted decimal) tr0
Network INTERFACE [129.35.33.2]
NAMESERVER [boston.rts.com]
Internet ADDRESS (dotted decimal) [192.152.143.91]
Domain Name
Default GATEWAY Address 4
(dotted decimal or symbolic name) no
RING Speed
START TCP/IP daemons Now

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

```

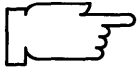
Note: Do *not* press Enter until you get to step 11 on page 14-5.

5. Use the following procedures for all versions of the preceding screen.

Note: Do *not* type any leading zeroes in the addresses. For example, do not type 002.020.120.010. Instead, type 2.20.120.10.

Refer to your TCP/IP worksheet. Type the information from the worksheet to the following fields on the Minimum Configuration & Startup screen:

- Hostname
- Internet Address
- Network Mask
- Nameserver Internet Address (if you have one)
- Domain Name
- Default Gateway Address (if you have one).



Note: Depending on your network configuration, you may not need to complete all of the entries on this screen.

6. Move the cursor to `START TCP/IP daemons Now`. Press the Tab key to change the default to `yes`.
7. You have two choices:
 - If you are using an Ethernet Network Interface, continue with step 8.
 - If you are using the Token-Ring Network Interface, skip to step 9.
8. If you need to change the setting for the type of cable you are using, move the cursor to `Your CABLE Type`. Press the Tab key to alternate between `bnc` and `dix`.
Skip to step 10.
9. If you need to change the RING speed setting, move the cursor to `RING Speed`. Press the Tab key to alternate between the values 4 and 16.
10. When you have finished making *all* your entries on this screen, confirm that the names and addresses are accurate.
 - If you need to make corrections to your entries, use the Up/Down cursor keys to move to the entry you need to correct and type over the old entry.
 - If your entries are correct, continue with step 11 on page 14-5.

11. To start the TCP/IP configuration process, press Enter.

A screen similar to the following is displayed:

```

                                COMMAND STATUS
Command: OK                      stdout: yes                      stderr: no
Before completion, additional instructions may appear below

tr0
fiat
inet0 changed
tok0 changed
The attribute 'ring-speed' is now changed to '4,' and this will be effective in next
reboot
tr0 changed
inet0 changed
Checking for srcmstr active ... complete
Starting tcpip daemons:
0513-059 The syslogd Subsystem has been started. Subsystem PID is 6027
0513-059 The sendmail Subsystem has been started. Subsystem PID is 4080
0513-059 The inetd Subsystem has been started. Subsystem PID is 5020
0513-059 The snmpd Subsystem has been started. Subsystem PID is 8822

F1 = Help      F2 = Refresh      F3 = Cancel      F6 = Command
F8 = Image     F9=Shell          F10=Exit
```

12. You have two choices:

- If TCP/IP started successfully, skip to step 14.
- If TCP/IP did *not* start successfully, continue with step 13.

13. Read the system messages on the Command Status screen to determine if any errors occurred.

- a. If any errors occurred, press F3 to return to the Minimum Configuration & Startup menu.
- b. Return to step 5 on page 14-4 and repeat steps 5 through 12. Make your corrections to the values that you entered previously.

14. Press F10 to exit SMIT.

TCP/IP is now ready to use. Continue with the next section, "C. Update the Hosts List."

C. Update the Hosts List

A *nameserver* is a machine on your network that stores the names and addresses of all the network machines. The names are stored in a Hosts List. When one machine wants to communicate with another, it sends that machine's name to the nameserver. The nameserver refers to the Hosts List and responds with the address of the machine name requested. Having a nameserver is an advantage because the Hosts List is stored and updated at one location, but is accessible to all machines on the network. This saves time and storage space.

If you are using a nameserver for network communications, you do not need to perform this procedure. You have finished configuring TCP/IP. Go to section "Configure NFS" if you want to configure NFS on page 14-10.

If you are *not* using a nameserver for network communications, you must update the hosts list to include the names of the systems on the network.

Use the following procedure to set up hostnames for each of the hosts with which you want to communicate.

PROCEDURE

1. Be sure you have logged in as root.
2. Type the following:

```
smit hostent (or smit -C hostent if you are working in AIXwindows)
and press Enter.
```

A screen similar to the following is displayed:

```

                                     Hosts Table (/etc/hosts)

Move cursor to desired item and press Enter.

List All Hosts
Add a Host
Change / Show Characteristics of a Host
Remove a Host

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

3. Move the cursor to `Add a Host` and press `Enter`.

A screen similar to the following is displayed:

Add a Host Name			
Type or select values in entry fields. Press <code>Enter</code> AFTER making all desired changes.			
			[Entry Fields]
* INTERNET ADDRESS (dotted decimal)			[]
* HOST NAME			[]
ALIAS(ES) (if any – separated by a blank space)			[]
COMMENT (if any – for the host entry)			[]
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	



Note: Do *not* press `Enter` until you get to step 5.

4. Use the following procedure for the preceding screen.

Note: Do *not* type any leading zeroes in the addresses. For example, do not type `002.020.120.010`. Instead, type `2.20.120.10` as the address.

Refer to your TCP/IP worksheet. Type the information from the worksheet to the following fields on the `Add a Host Name` screen:

- Internet address
- Host name
- Alias(es) (This is an optional field)
- Comment (This is an optional field).

5. When you have finished making *all* of the entries on this menu, do the following:

a. Press Enter.

A screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: OK                      stdout: yes                      stderr: no

Before completion, additional instructions may appear below

F1 = Help      F2 = Refresh      F3 = Cancel      F6 = Command
F8 = Image     F9=Shell          F10=Exit

```

b. Press F3 to return to the Add a Host Name screen.

- If you have no other host names to add, continue with step 6 on page 14-8.
- If you have additional host names to add, repeat steps 4 and 5 then continue with step 6.

6. Press F3 to return to the Hosts Table (/etc/hosts) menu.

7. Move the cursor to `List All Hosts` and press `Enter`.

A screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: OK      stdout: yes      stderr: no

Before completion, additional instructions may appear below

129.35.17.93    olga      olga
129.42.25.84    swen      swen
129.29.32.76    greta     greta

F1 = Help      F2 = Refresh    F3 = Cancel    F6 = Command
F8 = Image     F9=Shell        F10=Exit
```

The list displays the following information about all of the machines that your server can communicate with over the network:

- Internet address
- Host name
- Aliases
- Comments.

8. Confirm that the name and address you entered is correct.

- If the list is correct, go to step 9.
- If you need to correct the list, press `F3` and go back to step 3 on page 14-7.

9. Press `F10` to exit SMIT.

Go to section "Configure NFS" if you want to configure NFS on page 14-10.

Configure NFS

The following procedure describes how to configure NFS.

A. Prerequisite Tasks or Conditions

1. The Version 3.2 Base Operating System is installed.
2. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to "Chapter 19. SMIT Basics."
3. The TCP/IP and NFS software must be installed. If you need to install this software, you will have to install the "Base Operating System Network Facilities (BOSNET)" optional software product. Go to "Chapter 6. Optional Software Installation" and follow the procedures for installing optional software products; then return here and continue with step 4.
4. The TCP/IP software must have been configured. If you need to configure this software, go to section, "Configure TCP/IP" on page 14-2. Then return here and continue with the next section, "B. Configuring NFS."

B. Configuring NFS

For more information on NFS use the F1 key in SMIT for online help and search in InfoExplorer for "Network File System (NFS) Overview for System Management."

PROCEDURE

1. Be sure you have logged in as `root`.
2. Type the following:
`smit nfs` (or `smit -C nfs` if you are working in AIXwindows)
and press Enter.

A screen similar to the following is displayed:

NFS

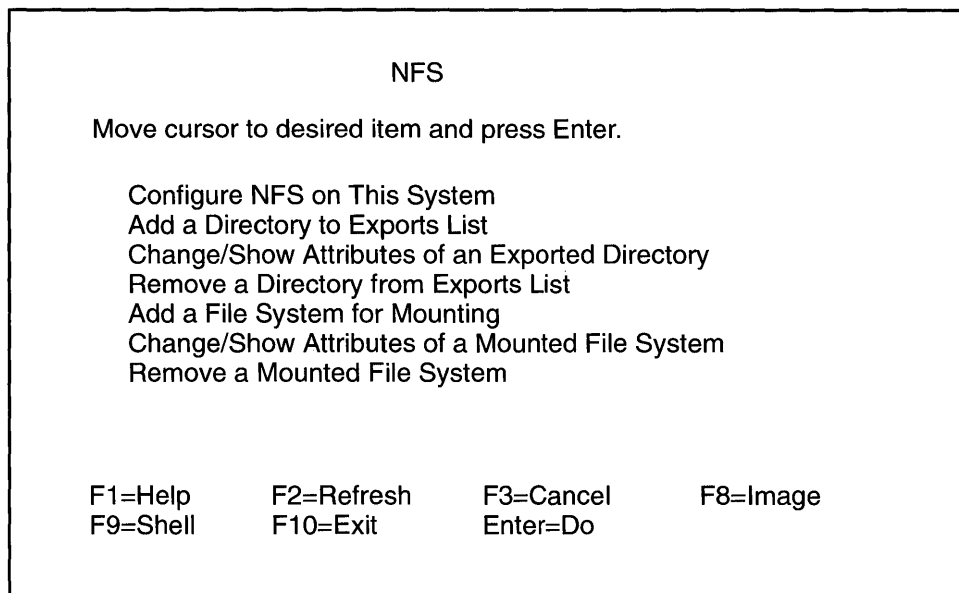
Move cursor to desired item and press Enter.

Configure TCP/IP (If Not Already Configured)
Network File System (NFS)
Network Information Services (NIS)
Configure Secure NFS & NIS
Highly Available NFS (HANFS)

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

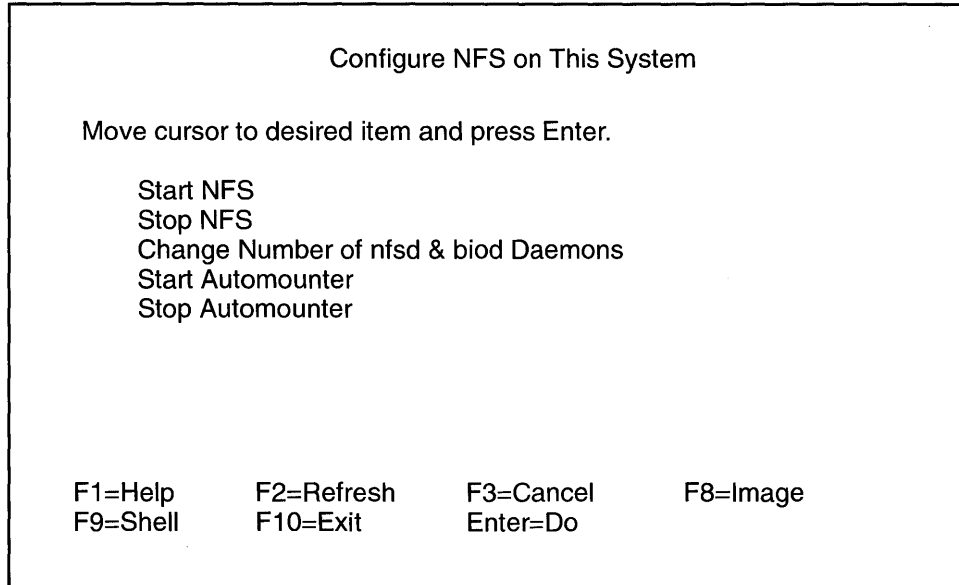
3. Move the cursor to `Network File System (NFS)` and press `Enter`.

A screen similar to the following is displayed:



4. `Configure NFS on This System` is highlighted. Press `Enter` to select it.

A screen similar to the following is displayed:



5. Start NFS is highlighted. Press Enter to select it.

A screen similar to the following is displayed:

```

                                Start NFS

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

* Start NFS now, on system restart or both  [Entry Fields]
                                           [both]      +

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

```

6. To start NFS, press Enter.

A screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: OK          stdout: yes          stderr: no

Before completion, additional instructions may appear below

0513-059 The portmap Subsystem has been started. Subsystem PID is 4890.
starting nfs services:
0513-059 The biod Subsystem has been started. Subsystem PID is 6946.
0513-059 The rpc.statd Subsystem has been started. Subsystem PID is 8233.

F1 = Help      F2 = Refresh      F3 = Cancel      F6 = Command
F8 = Image     F9=Shell          F10=Exit

```

7. Press F10 to exit SMIT.

You have finished configuring NFS.

If the machine on which you configured NFS is a file server, go to the section "Configure a NFS Server" on page 14-13 and follow the instructions for configuring a NFS server.

If the machine on which you configured NFS is a client, go to the section "Configure a NFS Client" on page 14-15 and follow the instructions for configuring a NFS client.

Configure a NFS Server

The following procedure describes how to configure a NFS server.

A. Prerequisite Tasks or Conditions

1. The Version 3.2 Base Operating System is installed.
2. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to "Chapter 19. SMIT Basics."
3. The TCP/IP software must be installed. If you need to install this software, you will have to install the "Base Operating System Network Facilities (BOSNET)" optional software product. Go to the "Chapter 6. Optional Software Installation" and following the procedures for installing optional software products; then return here and continue with step 4.
4. The TCP/IP and NFS software must have been configured. If you need to configure this software, go to sections, "Configure TCP/IP" on page 14-2 and "Configure NFS" on page 14-10. Then return here and continue with the next section, "B. Exporting a Directory within a File System."

B. Exporting a Directory within a File System

The following procedure describes how to export a directory within a file system from a server so that clients can mount it through NFS.

For more information on NFS use the F1 key in SMIT for online help and search in InfoExplorer for "Network File System (NFS) Overview for System Management."

PROCEDURE

1. Be sure you have logged in as root on the server machine.
2. On the server machine, type the following:

```
smit mknfsexp (or smit -C mknfsexp if you are working in AIXwindows)
```

and press Enter.

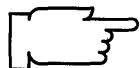
A screen similar to the following is displayed:

Add a Directory to Exports List

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

	[Entry Fields]
* PATHNAME of directory to export	[]
* MODE to export directory	read-write
HOSTNAME list. If exported read-mostly	[]
Anonymous UID	-2
HOSTS allowed root access	[]
HOSTS & NETGROUPS allowed client access	[]
Use SECURE option?	no
* EXPORT directory now, system restart or both	both
PATHNAME of Exports file if using HANFS	

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



Note: Do *not* press Enter until you get to step 5.

3. PATHNAME of directory to export is highlighted.
Type the name of the directory you want to export.
4. You can use the default values for the remaining entries or change the values depending on your network configuration.
5. After you have finished making your entries, press Enter.

A screen similar to the following is displayed:

COMMAND STATUS

Command: OK stdout: yes stderr: no
Before completion, additional instructions may appear below

/inst.images
exported /inst.images

F1=Help	F2=Refresh	F3=Cancel	F6=Command
F8=Image	F9=Shell	F10=Exit	

6. When the Command: status indicator changes to OK, press F10 to exit SMIT.

The directory within a file system is now exported and can be mounted through NFS by client machines.

Configure a NFS Client

The following procedure describes how to configure a NFS client.

A. Prerequisite Tasks or Conditions

1. The Version 3.2 Base Operating System is installed.
2. You should have a basic knowledge of System Management Interface Tool (SMIT). If you need to learn how to use SMIT, refer to “Chapter 19. SMIT Basics.”
3. The TCP/IP and NFS software must be installed. If you need to install this software, you will have to install the “Base Operating System Network Facilities (BOSNET)” optional software product. Go to the “Chapter 6. Optional Software Installation” and following the procedures for installing optional software products; then return here and continue with step 4.
4. The TCP/IP and NFS software must have been configured. If you need to configure this software, go to sections, “Configure TCP/IP” on page 14-2 and “Configure NFS” on page 14-10. Then return here and continue with the next step 5.
5. The NFS Client Configuration plan must have been completed. Go to “Chapter 16. Planning” and complete the plan; then return here and continue with the next section, “B. Mount a NFS File System.”

B. Mount a NFS File System

The following procedure describes how to mount the NFS file system from the server machine on the client machine.

For more information on NFS use the F1 key in SMIT for online help and search in InfoExplorer for “Network File System (NFS) Overview for System Management.”

PROCEDURE

1. Be sure you have logged in as root on the client machine.
2. If the mount point does not exist, create a directory structure to serve as a mount point for the remote file system. Use the **mkdir -p** command to create the mount point.

For example, to make a mount point using the directory structure **/source/MITX11/R5**, you would type:

```
mkdir -p /source/MITX11/R5
```

and press Enter.

3. On the client machine, type the following:

```
smit mknfsmnt (or smit -C mknfsmnt if you are working in AIXwindows)
```

and press Enter.

A screen similar to the following is displayed:

Add a File System for Mounting			
Type or select values in entry fields. Press Enter AFTER making all desired changes.			
[TOP]	[Entry Fields]		
* PATHNAME of mount point	[]	/	
* PATHNAME of remote directory	[]		
* HOST where remote directory resides	[]		
Mount Type NAME	[]		
* Use SECURE mount option?	no		+
* MOUNT now, add entry to /etc/filesystems or both?	now		+
* /etc/filesystems entry will mount the directory on system RESTART.	no		+
* MODE for this NFS file system	read-write		+
* ATTEMPT mount in background or foreground	background		+
NUMBER of times to attempt mount	[]		#
Buffer SIZE for read	[]		#
Buffer SIZE for writes	[]		#
NFS TIMEOUT. In tenths of a second	[]		#
[MORE...19]			
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

4. Use the following procedure for the preceding screen.



Note: Do *not* press Enter until you get to step 6.

Refer to your NFS Client Configuration worksheet. Type the information from the worksheet to the following fields on the Add a File System for Mounting screen:

- Pathname of mount point
- Pathname of remote directory
- Host where remote directory resides.

Refer to your worksheet. Press the Tab key to change to the correct value:

- Mount now, add entry to **/etc/filesystems** or both?
- **/etc/filesystems** mounts directory on system restart
- Mode for this NFS file system



Note: Depending on your network configuration, you may not need to complete all of the entries on this screen.

5. You can use the default values for the remaining entries or change them depending on your NFS configuration.
6. When you have finished making changes on this screen, press Enter to mount the NFS file system.
7. A **COMMAND STATUS** screen appears. When the **Command: status** indicator changes to **OK**, press F10 to exit SMIT

The NFS file system is now ready to use.

Suggested Reading

After your system is installed, you can use InfoExplorer, your online hypertext information library, to learn more about your system. You can step through the InfoExplorer menus or use the search function to locate information such as command names and article titles. You can also look for information in your hardcopy books if you ordered them.

Related Information

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP Internet.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *General Concepts and Procedures* provides information on file system types and management.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

IBM RISC System/6000 System Overview.

IBM RISC System/6000 Planning for Your System Installation.

Getting Started: Using the IBM RISC System/6000.

Getting Started: Managing the IBM RISC System/6000.

IBM RISC System/6000 Quick Reference.

IBM RISC System/6000 Problem Solving Guide.

NOTES

Chapter 15. Backing Up Your System

The Version 3.2 Base Operating System (BOS) offers several methods for backing up your system. This procedure describes how to create a backup image of your system's root volume group by using the SMIT Backup the System menu. This menu uses the **mkszfile** and **mksysb** (make system backup) commands to create a backup image. You can back up your system to tape or diskettes.

A backup image serves two purposes:

1. To restore a corrupted system using the system's own backup image, or
2. To install and configure software on one system and then duplicate that installation on other systems. This technique is called cloning.

It is important to keep in mind that the SMIT Backup the System menu only backs up the root volume group you are currently using. A root volume group is a hard disk, or group of disks, that contains the boot (start up) files, the Base Operating System, configuration information, and any optional software products that are installed on your system. Most systems, only have one root volume group. However, if your system has more than one root volume group, you must run the Backup the System function from within each root volume group. In addition, if you have any nonroot (unbootable) volume groups on your system, you should use the SMIT Backup Files in a Filesystem menu to back up these file systems.

It is important to understand the terms *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.

Beginning with Version 3.2, user configuration information may be retained when the SMIT Backup the System function is used. This means that you may avoid some of the configuration tasks that normally must be done after a system backup is restored. The configuration information will be retained during installation if:

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

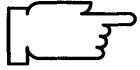
AND

The target has at least as much disk space as the source system.

During the installation of the backup image, 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 enough disk space on the target system, the entire backup is recovered. If there is not enough disk space, the installation will halt and the system will prompt you to choose more destination hard disks. When file systems are created on the target system they will be the same size as they were on the source (except for **/tmp** which will be at least 8 megabytes).

After the installation is complete, the Object Data Manager (ODM) on the target system is reconfigured. If the target system does not have exactly the same hardware configuration as the source system, the device attributes may be modified in the following target system files:

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



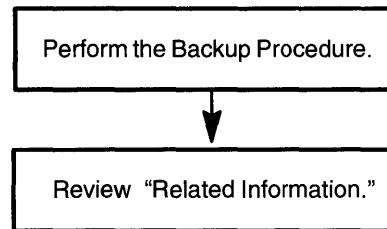
Note: If you are using backup image for cloning, there are two types of configuration data that you may not want copied to the target systems: passwords and network addresses. If passwords from the source are copied to the target systems this can create security problems. If network addresses are copied to a target system, duplicate addresses can disrupt network communications.

If you want to use the backup image to restore the system that you use to create it, you should create the backup *after* you have configured the system.

If you plan to use a backup image for installing (cloning) other target systems, then you should create your backup image *before* you configure the source system.

Flowchart for Backing Up Your System

This chart shows the basic steps that will be covered in this chapter.



Backing Up Your System

Use the following procedure to create a backup of the system on either tape or diskette.

PROCEDURE:

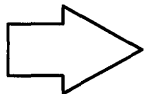
1. If you are not already logged in as the root user, log in as root now.
2. This procedure will *not* backup any unmounted file systems that are inside the root volume group. Therefore, if there are any unmounted file systems that you want backed up, you should mount them before proceeding. If there are any mounted file systems that you do *not* want backed up, you should unmount them before making the backup.

Note: File systems that are mounted across a network using NFS are never backed up by the **mksysb** command.

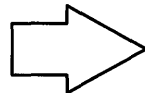
3. If a local directory is mounted over another local directory, this procedure will backup the files twice. Therefore, you should unmount any local directories which are mounted over another local directory.

For example, if you mounted **/tmp** over **/usr/tmp**, the files in the **/tmp** directory will be backed up twice.

4. Use the following instructions to find your start point.



If you are backing up your system to tapes, go to step 6.



If you are backing up your system to diskettes, go to step 5.

5. Make sure you have an adequate supply of formatted diskettes.

If you do not need to format diskettes, go to step 9 on page 15-6.

If you need to format diskettes, follow these steps:

- a. Insert a blank diskette into the diskette drive.
- b. Type the following:

```
format
```

and press Enter.
- c. When the system prompt returns, remove the diskette.
- d. Repeat steps a through c for each diskette you want to format.
- e. When you have finished formatting diskettes, go to step 9 on page 15-6.

6. Type the following:

```
smit lsdtpc      (or type smit -C lsdtpc if you are working in AIXwindows)
and press Enter.
```

A screen similar to the following is displayed:

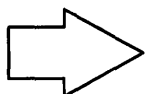
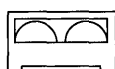
```

                                COMMAND STATUS

Command: OK      stdout: yes      stderr: no

Before command completion, additional instructions may appear
below.

name  status  location  description
rmt0  Available 00-08-00-30 2.3 GB 8mm Tape Drive
```



If you are backing up your system to tapes, the tape drive name starts with "rmt" followed by the tape drive number. For example, the first tape drive on your system is zero and is displayed as "rmt0."

7. Write down on a piece of paper the name of the tape drive. Be sure to get the name from your display screen and not from the example of the display screen in step 6.
8. Press F10 to exit SMIT.

9. Type the following:

`smit startup` (or type `smit -C startup` if you are working in AIXwindows)
and press Enter.

A SMIT System Startup menu similar to the following is displayed:

SYSTEM STARTUP MENU

Your Base Operating System has been installed.
You can now perform any of the options below.

Move cursor to desired item and press Enter.

Backup the System
System Environments
Software Products
TCP/IP
NFS

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

10. `Backup the System` is highlighted. Press Enter to select it. A screen similar to the following is displayed:

Backup the System

Type or select values in entry fields.
Press Enter AFTER making all desired changes.

WARNING: Execution of the backup command will result in the loss of all material previously stored on the selected output medium. This command backs up only rootvg volume group.

FORCE increase of work space if needed	[Entry Fields]	
*Backup DEVICE or FILE	no	+
(example: /dev/rfd0)	[]	

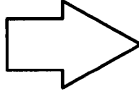
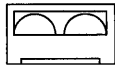
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

11. Insert the first blank backup tape or diskette into the drive.
12. `FORCE` increase of work space if needed is highlighted.
Press the Tab key to change the default value to `yes`.



Note: During a BOS installation from a backup image, the `/tmp` file system needs to be at least 7 megabytes. Changing this field to `yes` will increase the recorded size of the `/tmp` file system on the backup image so that there will be enough work space.

13. Move the cursor to Backup DEVICE or FILE.

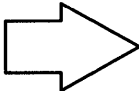


If you are backing up your system to tapes, type the following:
(where `xxxx` is the name of the tape drive you wrote down in step 7.)

```
/dev/xxxx.1
```

For example, if the tape drive was “`rmt0`” in step 7, then you would type `/dev/rmt0.1`.

Continue with step 14.



If you are backing up your system to diskettes, type in the name of the diskette drive you want to use. Diskette drive names start with “`/dev/rfd`” followed by the diskette drive number. For example, the first diskette drive is “`/dev/rfd0`” and the second diskette drive is “`/dev/rfd1`.”

Continue with step 14.

14. Press the Enter key. A COMMAND STATUS screen will appear.

Status messages appear while the system is backing up.



Note: During the backup process, the system may prompt you to insert the next tape or diskette by displaying a message similar to the following:

```
tar: End of tape. Mount next tape on /dev/rmt0 and type return.
```

If this message occurs, remove the tape or diskette and label it (include the BOS version number). Then insert another tape or diskette and press Enter.

When the backup process finishes, the `COMMAND:` field changes to `OK`.

15. When the backup is complete, press F10 to exit SMIT.

16. Remove the last diskette or tape from the drive and label it. If the system you backed up contains root and user passwords, you should also write down these passwords. Keep in mind that these passwords will again be active if this backup is used to restore this system or install another system.

17. Write protect the backup tapes or diskettes you just created.

You are done creating the backup of your current root volume group (RVG). If you have only one RVG on your system and do not have any nonroot volume groups, go to step 18.

If there is another root volume group on your system (most systems only have one), make the next root volume group active (for instructions see the **bootlist** command in InfoExplorer). Then reboot the system and return to step 1 and repeat the backup procedure for the second root volume group using fresh tapes or diskettes.

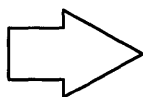
If you have any nonroot volume groups, you should back these up now to fresh tapes or diskettes using the SMIT Backup Files in a Filesystem menu.

To access this menu, type the following:

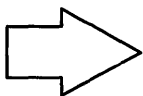
```
smit backup      (or type smit -C backup if you are working in AIXwindows)
and press Enter.
```

When you are finished backing up all your volume groups, go to step 18.

18. Read the information next to the appropriate icon below.



The tapes you just created are bootable. This is a new feature of Version 3.2. Tapes made using the procedure in this chapter can be used to start your system if for some reason you cannot boot from your hard disks.



If you backed up to diskettes, the backup diskettes cannot be used to boot your system. If you did not purchase a set of BOSboot diskettes along with your current version of BOS or if you have updated BOS since the initial purchase, you need to create a set of BOSboot diskettes to boot your system. Go to "Chapter 11. Creating the BOSboot Diskettes."

The procedures for installing (or restoring) a backup image are contained in "Chapter 3. Installation from a System Backup."

Related Information

The following is a list of titles you may want to read in InfoExplorer or your hardcopy manuals. These articles and books provide more detailed information on the concepts and procedures covered in this chapter:

The **installp** command, **tar** command, **ls** command.

The Backup Overview in *General Concepts and Procedures* explains different methods of backing up using various types of backup media, restoring system backups, and guidelines for backup policies.

The Logical Volume Storage Overview in *General Concepts and Procedures* provides information about the Logical Volume Manager and how logical volumes, physical volumes, and volume groups work together.

The System Management Interface Tool (SMIT) Overview in *General Concepts and Procedures* explains the structure, main menus, and tasks that are done with SMIT.

The File Systems Overview in *General Concepts and Procedures* provides information on file system types and management.

The TCP/IP Overview for System Management in *Communication Concepts and Procedures* explains the basic functions of TCP/IP including Internet.

The Network File System (NFS) Overview for System Management in *Communication Concepts and Procedures* discusses NFS daemons, commands, files, network services, and implementation.

The Mounting Overview in *General Concepts and Procedures* provides information on mounting files and directories, mount points, and automatic mounts.

Using InfoExplorer in *Getting Started: Using the IBM RISC System/6000*.

Using SMIT in *Getting Started: Managing the IBM RISC System/6000*.

IBM RISC System/6000 Problem Solving Guide.

NOTES

Part III. Reference Information

Chapter 16. Planning

This chapter contains the following sections:

Installation Plans	page 16-2
BOS Installation Plan	page 16-2
TCP/IP Configuration Plan	page 16-13
NFS Client Configuration Plan	page 16-16
Creating File Systems Plan (Installing the Operating System)	page 16-18
Creating File Systems Plan (Using the Server's /usr)	page 16-20
Adding a Diskless Client Plan	page 16-22
Optional Software Installation Plan	page 16-24

BOS Installation Plan

This section contains instructions for planning your BOS installation. Go to the section below for the type of BOS installation you are performing.

- Tape or Diskette Installation, go to A.
- System Backup Installation, go to B.
- Network Installation, go to C.
- Installation for use with a **/usr** Server, go to D.

A. Tape or Diskette Installation

1. Are you performing a preservation installation?
YES: Complete the Preservation Installation Plan on page 16-3.
NO: Complete the New or Complete Overwrite Installation Plan on page 16-6.
2. Return to "Chapter 2. BOS Installation from Tape or Diskette."

B. System Backup Installation

1. Are you using a network to get your backup?
YES: Complete the Network Parameters Plan on page 16-9.
NO: Go to step 2.
2. Return to "Chapter 3. Installation from a System Backup."

C. Network Installation

1. Complete the Network Parameters Plan on page 16-9.
2. Are you performing a preservation installation?
YES: Complete the Preservation Installation Plan on page 16-3.
NO: Complete the New or Complete Overwrite Installation Plan on page 16-6.
3. Return to "Chapter 4. BOS Installation from Network."

D. Installation for use with a **/usr** Server

1. Are you using a network to get your installation image?
YES: Complete the Network Parameters Plan on page 16-9.
NO: Go to step 2.
2. Complete the **/usr** Server Parameters Plan on page 16-11.
3. Return to "Chapter 5. BOS Installation for Use with a **/usr** Server."

Preservation Installation Plan

The instructions in this section will guide you in determining whether or not you have enough disk space for the software you plan to install in the current root volume group.

Use the instructions below to fill out the BOS Installation Worksheet (Preservation) on page 16-5. The letters in the instructions refer to the letters in front of the items on the BOS Installation Worksheet (Preservation).

Note: If you are confident you have enough disk space for the software you plan to install, you do not need to complete this plan. Return to page 16-2.

Note: If you used the Upgrade Utilities to create system documentation, use this documentation to fill out the worksheet and then skip to step 5. Otherwise, begin with step 1.

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
ipl_varyon -i
```

and press Enter.

If you are using Version 3.2, the system display is similar to the following:

PV_NAME	BOOT DEVICE	PVID	VOLUME GROUP ID
hdisk0	YES	000000006d1520c9	000000006d159f6e
hdisk1	NO	000000006d157ab7	000000006d159f6e

If you are using Version 3.1, the system display is similar to the following:

VOLUME GROUP	PVNAME	PVID	BOOT DEVICE
000000006d159f6e0000000000000000	hdisk0	000000006d1520c90000000000000000	YES
	hdisk1	000000006d157ab70000000000000000	NO

3. Write the VOLUME GROUP ID(s) and PV_NAME(s) on your plan for each hard drive listed in step 2.
4. Repeat steps a through b below for each PV_NAME from step 3.

- a. Type the following:

(where `pv_name` is the physical volume name (PV_NAME) of the hard drive(s) from step 3 and the `-l` is a lower case "L")

```
lsdev -C -l pv_name
```

and press Enter

For example, if you entered `lsdev -C -l hdisk0`, the system would display similar to the following:

```
hdisk0 Available 00-01-00-00 320 MB SCSI Disk Drive
```

- b. Write the location and size on your plan.

For example, you would write "00-01-00-00" under the LOCATION column and "320" under the SIZE column.

Note: For a "Direct Attached Disk Drive" the size will be 120.

5. Type the following:

```
df /
```

and press Enter.

6. Write down the Total KB number that appears on your screen on the line next to Total KB for / (root) on row A. Divide the number you wrote down by 1024 and write this new number on the far right blank on row A.

7. Type the following:

```
df /usr
```

and press Enter.

8. Write down the Total KB number that appears on your screen on the line next to Total KB for /usr on row B. Divide the number you wrote down by 1024 and write this new number on the far right blank on row B.

9. Type the following:

```
lsvg rootvg
```

and press Enter.

10. Write down the FREE PPs: number that appears between the parentheses, the number of megabytes, on the line next to FREE PPs on row C.

11. Add the three numbers in the far right column on rows A, B, and C and write it on the line next to "Available Space" on row D.

12. Use "Chapter 17. Product Information" to determine whether or not you have enough disk space for the software you plan to install. Include any prerequisite programs for the software you plan to install.

13. You have completed this worksheet. Return to page 16-2.

BOS Installation Worksheet (Preservation)

Photo copy this document and fill out the copy.

System Name: _____

System Administrator: _____

Date: _____

PV name	VG identifier	Location	Size

A. Total KB for / (root) _____ / 1024 = _____

B. Total KB for /usr _____ / 1024 = _____

C. FREE PPs _____

D. Available Space _____

New or Complete Overwrite Installation Plan

The instructions in this section will guide you in selecting the hard drives for the root volume group for a New or Complete Overwrite Installation.

Use the instructions below to fill out the BOS Installation Worksheet (New or Complete Overwrite) on page 16-8.

Note: If you have only one hard drive or you want to use all your hard drives for the root volume group, you do not need to complete this plan. Return to page 16-2.

Note: If you used the Upgrade Utilities to create system documentation, use the documentation to fill out the worksheet and then skip to step 6. Otherwise, begin with step 1.

1. If you are performing a New Installation, refer to the “About Your Machine” document and write down the size of each hard drive on the worksheet. Skip to step 6.

If you are performing a Complete Overwrite Installation, go to step 2.

2. If you are not already logged in as root, log in as root now.

3. Type the following:

```
ipl_varyon -i
```

and press Enter.

If you are using Version 3.2, the system display is similar to the following:

PV_NAME	BOOT DEVICE	PVID	VOLUME GROUP ID
hdisk0	YES	000000006d1520c9	000000006d159f6e
hdisk1	NO	000000006d157ab7	000000006d159f6e

If you are using Version 3.1, the system display is similar to the following:

VOLUME GROUP	PVNAME	PVID	BOOT DEVICE
000000006d159f6e0000000000000000	hdisk0	000000006d1520c90000000000000000	YES
	hdisk1	000000006d157ab70000000000000000	NO

4. Write the VOLUME GROUP ID(s), BOOTABLE DEVICE and PV_NAME(s) on your worksheet for each hard drive listed in step 3.

5. Repeat steps a through b below for each PV_NAME from step 4.

- a. Type the following:

(where `pv_name` is the physical volume name (PV_NAME) of the hard drive(s) from step 4 and the `-l` is a lower case “L”)

```
lsdev -C -l pv_name
```

and press Enter

For example, if you entered `lsdev -C -l hdisk0`, the system would display similar to the following:

```
hdisk0 Available 00-01-00-00 320 MB SCSI Disk Drive
```

- b. Write the location and size on your plan.

For example, you would write “00-01-00-00” under the LOCATION column and “320” under the SIZE column.

Note: For a "Direct Attached Disk Drive" the size will be 120.

6. Use "Chapter 17. Product Information" to determine the disk space requirements of the software that you plan to install. Include any prerequisite programs for the software you plan to install.

Write the disk space requirement number on row A.

7. Calculate system paging space based on the total size of RAM (Memory cards) to be configured on your system unit.
 - Typically, paging space should be equal to twice the amount of RAM. When RAM exceeds 64MB, paging space should be equal to RAM plus 16MB.
 - If the amount of RAM is larger than 16MB, paging space is allocated across disks at time of installation
 - Paging space is limited to 20% of a given disk.

Write the paging size number on row B.

8. The disk space requirement number on row A represents only the licensed programs you plan to install. Estimate how much space you will need for your data and for any additional applications.

Write the additional disk space requirement number on row C.

9. Add the rows A, B, and C and write the total on row D.

10. Use the total on row D to determine which hard drives you need. Consider that 1MB of software is equal to 1,048,576 storage locations, while 1MB of disk drive capacity is equal to 1,000,000 storage locations. The following table can help you determine your disk drive requirements.

RISC System/6000 Disk Drive	Maximum Software per Disk Drive
IBM 160MB Direct Attached Disk Drive	152MB
IBM 160MB SCSI Disk Drive	152MB
IBM 320MB SCSI Disk Drive	304MB
IBM 355MB SCSI Disk Drive	336MB
IBM 400MB SCSI Disk Drive	380MB
IBM 670MB SCSI Disk Drive	636MB
IBM 800MB SCSI Disk Drive (400MB pair)	760MB
IBM 857MB SCSI Disk Drive	816MB
IBM 857MB Serial Disk Drive	816MB

Mark the hard drives on the work sheet that you want to use.

11. You have completed this worksheet. Return to page 16-2.

BOS Installation Worksheet (New or Complete Overwrite)

Photo copy this document and fill out the copy.

System Name: _____

System Administrator: _____

Date: _____

PV name	Location	Size	VG identifier	Bootable disk

- A. Disk space requirements _____ (MB)
- B. Paging space requirements _____ (MB)
- C. Additional disk space requirements _____ (MB)
- D. Total disk space requirements _____ (MB)

Network Parameters Plan

The instructions in this section will guide you in collecting the information you need to install BOS over a network.

Use the instructions below to fill out the Network Parameters Worksheet on page 16-10. The letters in the instructions refer to the letters in front of the items on the Network Parameters Worksheet.

Note: Do *not* write down any leading zeroes in the client, server, gateway and subnet mask addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. Write down the client IP address on row B.
2. Write down the server IP address on row C.
3. If you are using a subnet mask, write it down on row D.
4. If you are using a gateway, write down the gateway's address on row E.
5. Are you using Token-Ring for network communications?
YES: Circle **/dev/tok** in row A.
Circle the ring speed (**4** or **16**) in row F.
NO: Circle **/dev/ent** in row A.
Circle the connector type (**bnc** or **15 pin d-type**) in row G.
6. You have completed this worksheet. Return to page 16-2.

/usr Server Parameters Plan

The instructions in this section will guide you in collecting the information you need to install BOS with a **/usr** server.

Use the instructions below to fill out the /usr Server Parameters Worksheet on page 16-12. The letters in the instructions refer to the letters in front of the items on the /usr Server Parameters Worksheet.

Note: Do *not* write down any leading zeroes in the client, server, gateway and subnet mask addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. Write down the client address on row B.
2. Write down the server address on row C.
3. If you are using a gateway, write down the gateway's address on row D.
4. If you are using a subnet mask, write it down on row E.
5. Are you using the Token-Ring Network Interface for network communications?
YES: Write down "tr Token-Ring" on row A.
Circle the ring speed (**4** or **16**) in row F.
NO: Circle the connector type (**bnc** or **15 pin d-type**) in row G.
6. Are you using the Standard Ethernet Network Interface?
YES: Write down "en Standard Ethernet" on row A.
NO: Write down "et IEEE 802.3 Ethernet" on row A.
7. You have completed this worksheet. Return to page 16-2.

/usr Server Parameters Worksheet

Photo copy this document and fill out the copy.

System Name: _____

System Administrator: _____

Date: _____

Enter Network Parameters

A. Network Interface: []

B. Client address: []

C. Server address: []

D. Gateway address []

E. Subnet mask: []

F. Token-Ring data rate (Token-Ring only): [**4** or **16**]

G. Ethernet Connector (Ethernet only): [**bnc** or **15 pin d-type**]

TCP/IP Configuration Plan

The instructions in this section will guide you in collecting the information you need to configure TCP/IP for network communications.

Use the instructions below to fill out the TCP/IP Minimum Configuration & Startup Worksheet on page 16-14. The letters in the instructions refer to the letters in front of the items on the TCP/IP Minimum Configuration & Startup Worksheet.

Note: Do *not* write down any leading zeroes in the Internet, gateway and subnet mask addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. For item A write down the two letter abbreviation for the type of network interface you are using.
 - en – Standard Ethernet Network Interface
 - et – IEEE 802.3 Ethernet Network Interface
 - tr – Token-Ring Network Interface
 2. Write down the hostname on row B.
 3. Write down the Internet address on row C.
 4. If you are using a subnet mask, write down the subnet mask on row D.
 5. If you are using a nameserver, do the following:
 - a. Write down the nameserver's address in row E.
 - b. Write down the domain name in row F.
 6. If you are using a gateway, write down the gateway's address on row G.
 7. Are you using a Token-Ring for network communications?

YES: Circle the ring speed (**4** or **16**) in row H.

NO: Circle the type or Ethernet connection you will be using (**bnc** or **dix**) in row I.
 8. If you are using a nameserver, you have completed this plan. Return to "Chapter 14. Network Configuration" section, "Configure TCP/IP."
- If you are not using a nameserver, go to page 16-15 and complete the host list table.

TCP/IP Minimum Configuration and Startup Worksheet

Photo copy this document and fill out the copy.

TCP/IP Minimum Configuration and Startup worksheet:

System Name: _____

System Administrator: _____

Date: _____

Minimum Configuration & Startup

A. Network Interface: .. []

B. HOSTNAME: []

C. Internet ADDRESS: . []

D. Network MASK: []

NAMESERVER

E. Internet ADDRESS: []

F. Domain Name: .. []

G. Default GATEWAY Address: []

H. RING Speed (Token-Ring only): [**4** or **16**]

I. Your Cable Type (Ethernet only): [**bnc** or **dix**]

Updating the Host List

Photo copy this document and fill out the copy

Note: Do *not* write down any leading zeroes in the Internet addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. Fill in the HOST LIST below for *each* of the other systems on your network you need to communicate with.

When filling out the Host List, keep the following points in mind:

- a. The Internet addresses and Host names must be unique. Addresses and names cannot be duplicated in the list.
- b. The Alias(es) column does not have to be filled in. An alias is an additional host name (a synonym) for the host name in column 2.

Internet address	Host name	Alias(es)	Comment:

2. Return to "Chapter 14. Network Configuration" section, "Configure TCP/IP."

NFS Client Configuration Plan

Your system administrator can provide you with the information necessary to complete this plan.

The instructions in this section will guide you in collecting the information you need to configure a NFS client for network communications.

Use the instructions below to fill out the NFS Client Configuration Worksheet on page 16-17. The letters in the instructions refer to the letters in front of the items on the NFS Client Configuration Worksheet.

1. Write down on row A the full path name of the mount point (directory) on your client where you want to mount the server's file system.
2. Write down on row B the full path name of the directory of the server's file system.
3. Write down on row C the hostname of the server.
4. Do you want to have this file system available every time your system restarts?
YES: Write down "both" in row D.
Circle "yes" in row E.
NO: Go to step 5.
5. Do you want to manually make this file system available every time your system restarts?
YES: Write down "both" in row D.
Circle "no" in row E.
NO: Write down "now" in row D.
Circle "no" in row E.
6. Do you only need to read the remote file system?
YES: Write down "read-only" in row F.
NO: Write down "read-write" in row F.
7. You have completed this worksheet. Return to "Chapter 14. Network Configuration" section, "Configure a NFS Client."

NFS Client Configuration Worksheet

Photo copy this document and fill out the copy.

System Name: _____

System Administrator: _____

Date: _____

Configuring an NFS Client

- A. PATHNAME of mount point: []
- B. Pathname of remote directory: []
- C. HOST where remote directory resides []
- D. Mount now, add entry to **/etc/filesystems** or both? []
- E. **/etc/filesystems** mounts directory on system restart [**yes** or **no**]
- F. MODE for this NFS file system []

Creating File Systems Plan (Installing the Operating System)

The instructions in this section will guide you in collecting the information you need to provide resources for diskless workstations (clients).

Use the instructions below to fill out the Creating File System Worksheet (Installing the operating system) on page 16-19. The letters in the instructions refer to the letters in front of the items on the worksheet.

1. A SPOT name is not a hostname, but it is a name that describes a group of diskless workstations. For example, if you are creating a SPOT for Department 500, you could name the SPOT, "dept500."

Write down the SPOT name on the "SPOT Name" line on your worksheet.

2. To calculate the size of the SPOT file system, use the following formula:
(where 70 is the size in megabytes (MB) of the Base Operating System (BOS) and 2048 is the number of 512-byte blocks in 1MB)

file system size = (70 + disk space required for optional software) x 2048.

To find the disk space required for optional software (excluding the Base Operating System) refer to "Chapter 17. Product Information"

Write the number you calculate on row A.

3. To calculate the size of the root file system, use the formula:
(where 4 is the minimum size (MB) required for the root portion of the client and 2048 is the number of 512-byte blocks in 1MB)

file system size = number of workstations x 4 x 2048.

Write the number you calculate on row E.

4. To calculate the size of the home file system, use the following formula:
(where 2048 is the number of 512-byte blocks in 1MB)

file system size = (number of MB per user) x (total number of users on ALL workstations) x 2048.

Write the number you calculate on row G.

For example, if you want to allow 1.5 megabytes (MB) of hard disk space per user and you have 6 users on client machine A and 4 users on client machine B, you would have a total of 10 users for this home file system. $1.5 \times 10 \times 2048 = 30720$. You would write 30720 on row G.

5. To calculate the size of the paging file system, use the following formula:
(where the first 2048 number is the number of 512-byte blocks in 1MB, the second 2048 number is extra space required by the file system, and 2 represents twice the amount of RAM available to ALL workstations.)

file system size = (total number of MB of RAM for ALL workstations x 2 x 2048) + 2048.

To find the amount of RAM (Memory cards) that was shipped with a workstation, refer to the *About Your Machine* document that came with the workstation.

Write the number you calculate on row K.

6. You are finished with this worksheet. Return now to "Chapter 10. Diskless System Installation."

Creating File Systems Worksheet (Installing the Operating System)

Photo copy this document and fill out the copy.

SPOT Name: _____

System Name: _____

System Administrator: _____

Date: _____

Add a File System

Check the boxes below after you have added each file system.

- | | | | |
|--------------------------|---|---|-----------------|
| <input type="checkbox"/> | SPOT file system (minimum size 143360) | | |
| | A. Size of file system: | [|] |
| | B. Mount Point: | [| /export/exec] |
| <input type="checkbox"/> | Share file system | | |
| | C. Size of file system: | [| 8192] |
| | D. Mount Point: | [| /export/share] |
| <input type="checkbox"/> | Root file system (minimum size 8192) | | |
| | E. Size of file system: | [|] |
| | F. Mount Point: | [| /export/root] |
| <input type="checkbox"/> | Home file system | | |
| | G. Size of file system: | [|] |
| | H. Mount Point: | [| /export/home] |
| <input type="checkbox"/> | Dump file system | | |
| | I. Size of file system: | [| 16384] |
| | J. Mount Point: | [| /export/dump] |
| <input type="checkbox"/> | Paging file system (minimum size 67584) | | |
| | K. Size of file system: | [|] |
| | L. Mount Point: | [| /export/swap] |
| <input type="checkbox"/> | BOOTP file system | | |
| | M. Size of file system: | [| 8192] |
| | N. Mount Point: | [| /tftpboot] |

Creating File Systems Plan (Using the Server's /usr)

The instructions in this section will guide you in collecting the information you need to provide resources for diskless workstations (clients).

Use the instructions below to fill out the Creating File Systems Worksheet (Using the Server's /usr) on page 16-21. The letters in the instructions refer to the letters in front of the items on the worksheet.

1. A SPOT name is not a hostname, but it is a name that describes a group of diskless workstations. For example, if you are creating a SPOT for Department 500, you could name the SPOT, "dept500."

Write down the SPOT name on the "SPOT Name" line on your worksheet.

2. To calculate the size of the root file system, use the formula:
(where 4 is the minimum size (MB) required for the root portion of the client and 2048 is the number of 512-byte blocks in 1MB)

file system size = number of workstations x 4 x 2048.

Write the number you calculate on row A.

3. To calculate the size of the home file system, use the following formula:
(where 2048 is the number of 512-byte blocks in 1MB)

file system size = (number of MB per user) x (number of users on ALL workstations) x 2048.

Write the number you calculate on row C.

For example, if you want to allow 1.5 megabytes (MB) of hard disk space per user and you have 6 users on client machine A and 4 users on client machine B, you would have a total of 10 users for this home file system. $1.5 \times 10 \times 2048 = 30720$. You would write 30720 on row C.

4. To calculate the size of the paging file system, use the following formula:
(where the first 2048 number is the number of 512-byte blocks in 1MB, the second 2048 number is extra space required by the file system, and 2 represents twice the amount of RAM available to ALL workstations)

file system size = (total number of MB of RAM for ALL workstations x 2 x 2048) + 2048.

To find the amount of RAM (Memory cards) that was shipped with a workstation, refer to the *About Your Machine* document that came with the workstation.

Write the number you calculate on row G.

5. You are finished with this worksheet. Return now to "Chapter 10. Diskless System Installation."

Creating File Systems Worksheet (Using the Server's /usr)

Photo copy this document and fill out the copy.

SPOT Name: _____

System Name: _____

System Administrator: _____

Date: _____

Add a File System

Check the boxes below after you have added each file system.

- Root file system (minimum size 8192)
 - A. Size of file system: []
 - B. Mount Point: [/export/root]

- Home file system
 - C. Size of file system: []
 - D. Mount Point: [/export/home]

- Dump file system
 - E. Size of file system: [16384]
 - F. Mount Point: [/export/dump]

- Paging file system (minimum size 67584)
 - G. Size of file system: []
 - H. Mount Point: [/export/swap]

- BOOTP file system
 - I. Size of file system: [8192]
 - J. Mount Point: [/tftpboot]

Adding a Diskless Client Plan

The instructions in this section will guide you in collecting the information you need to configure diskless workstations (clients). A client is a machine, not a human user.

Use the instructions below to fill out the Adding a Diskless Client Worksheet on page 16-23. The letters in the instructions refer to the letters in front of the items on the worksheet.

Note: Do *not* write down any leading zeroes in the Internet, gateway and subnet mask addresses. For example, do not write 002.020.120.010. Instead, write 2.20.120.10.

1. Are you using a nameserver (the term nameserver is defined in the glossary)?

YES: I'm using a nameserver – write "N/A" on rows A and B and go to step 4.

NO: I'm not using a nameserver – go to step 2.

2. Write down the Internet address of the diskless client on row A.

3. Write down the diskless client's hostname on row B.

4. Write down the SPOT name on row C.

5. Write down the diskless client's hostname on row D.

6. If you are using Ethernet, circle 1 on row E.

If you are using Token-Ring, circle 6 on row E.

7. For each diskless client you want to add to your diskless community, you must have the hardware address of the client's network adapter.

Note: The hardware address is *not* the same as the Internet address (dotted decimal).

If you already know the client's hardware address, write it down on row F and continue with step 8.

If you do *not* know the client's hardware address, refer the documentation that came with your workstation and follow the setup procedure until you are told to write down the hardware address. Then, return here and write it down on row F.

For example, if you are adding a Model 7011, refer to the *7011 Setup and Operator Guide*. For a Model 7012, use the *7012 POWERstation and POWERserver Guide*.

8. If you are using a gateway for network communications, write down the gateway's network address on row G. (**Note:** You must use a subnet mask if you use a gateway.)

9. If you are using a subnet mask for network communications, write down the subnet mask on row H.

10. To calculate the paging size for the client you wrote down on row D, use the formula: (where 2048 is the number of 512-byte blocks in 1MB and 2 represents twice the amount of RAM available to the client)

paging size = (number of megabytes of RAM for client on row D x 2) x 2048.

Write down the result in row I.

To find the amount of RAM (Memory cards) that came with the client, refer to the *About Your Machine* document that came with your client.

11. You are finished with this worksheet. Return now to "Chapter 10. Diskless System Installation."

Adding a Diskless Client Worksheet

Photo copy this document and fill out the copy.

You must complete this section for *each* diskless client machine that you are adding to your diskless community.

Server hostname: _____

System Administrator: _____

Date: _____

Add a Host Name

A. Internet address: []

B. Client: []

Add a Diskless Client

C. SPOT name: []

D. Client hostname: []

E. Network hardware type: [1 or 6]

F. Hardware address of client: .. []

G. Gateway Address: []

H. Subnetmask: []

I. Paging size in blocks: []

Optional Software Installation Plan

The instructions in this section will guide you in collecting the information you need to install optional software products.

Use the instructions below to fill out a photo copy of the Optional Software Installation Worksheet on page 16-26.

1. Type the following:

```
df /usr
```

and press Enter.

2. Divide the number in column three that appears on your screen by 1024 and write it in the free megabytes space on your worksheet.

3. Type the following:

```
lsvg rootvg
```

and press Enter.

Look at the field labeled "FREE PPs." Write into the Free PPs line in your worksheet the number that appears in the parentheses (NOT the number to the left of the parentheses).

4. Add the Free Megabytes and FREE PPs numbers together and write down the sum on the line next to "DISK SPACE AVAILABLE" on the worksheet.

5. If you want to list the software on your installation media, do the following:

- a. If you are using tapes or diskettes, insert the first tape or diskette.

- b. Type the following:

```
smit instupdt_list
```

and press Enter.

- c. At the List All Software on Installation Media screen, press F4 to generate a list of input devices.

- d. Move the cursor to highlight the device or directory from which you are installing:

/usr/sys/inst.images	if you are using a preloaded system
/usr/sys/inst.images	if you are installing over a network
/dev/rmtx.1	if you are installing from tape
/dev/fdx	if you are installing from diskette

and press Enter.

- e. Press Enter again to list the software. Use the Up and Down arrow keys or the Page Up and Page Down keys to scroll through the list.

- f. When you are finished viewing the list, press F10 to exit SMIT.

6. Use "Chapter 17. Product Information" to complete the worksheet on page 16-26.

7. You have completed this worksheet. Return now to chapter 6.

Optional Software Installation Worksheet

Photo copy this document and fill out the copy.

Fill out the following information for each Optional Software Product that you want to install on your system.

You will find the information necessary to fill out this plan in "Chapter 17. Product Information" of your installation guide.

Use "Chapter 17. Product Information" to fill in these columns.					
Product Name	Option Name(s)	Prerequisites For Products And/Or Options	Page # of Procedure For Stopping Processes, If Required	Page # of Special Instructions, If Required	Disk Space Required

Free Megabytes: _____
Free PPs: _____

TOTAL SPACE NEEDED: _____
DISK SPACE AVAILABLE: _____

NOTES

Chapter 17. Product Information

This chapter contains installation information that is unique to the separately installable software products and their options. Optional software products include those that are separately purchased as well as the of products that come with Version 3. Each software product can contain a variety of separately installable options. Use this section with the Optional Software Installation Plan on page 16–24 in “Chapter 16. Planning” to plan your optional software installation.

The following information is listed for each optional software product:

Product Description	Describes the software product.
Option Names	Lists the option names and descriptions of those options. Refer to the next section called “Understanding Option Names” for an explanation of naming conventions and abbreviations.
Prerequisite Software	Lists other software product options that must be installed <i>before</i> or <i>with</i> the software product option. Note: Most software products require that the Version 3.2 Base Operating System (bos.obj) be installed. The only <i>exceptions</i> are ESSL, OSIMF, and the compilers (C, COBOL, FORTRAN, and Pascal).
Software Processes to Stop	Lists the software processes that must be stopped prior to installing the software product. Also includes procedures for stopping software processes. Note: For the installation of most software, it is recommended all processes be stopped. However, if it is not feasible for you to stop all processes. This section will help you identify only those processes that you <i>must</i> stop.
Special Installation Instructions	Lists any other special installation instructions for that software product.
Disk Space Required (in Megabytes (MB))	Lists the amount of hard disk space required in megabytes (MB) that is required to store the software after it is installed.
Special Hardware Required	Lists special hardware that is required to use this software product. The hardware must be installed prior to software installation.
Suggested Reading	Lists suggested reading for some of the optional software products. Some references include information about configuring optional software after it is installed.

Understanding Option Names

Software product options are separately installable units that can operate independently from other options of that product. Some software product options can also be accessed independently from other options.

Software product options are named according to the following conventions:

- The first part of the name is an abbreviation of the software product name. It corresponds to a directory under **/usr/lpp**.
- The rest of the option name consists of standardized extensions, listed in sequence, and separated by a period. These extensions represent the type of option.

For more information about installing optional software product options, refer to section “E. Additional Installation Concepts” in “Chapter 6. Optional Software Installation.”

The following lists some of the common extensions that are used:

all	Choosing this extension installs <i>all</i> of the options for the software product.
data	The shared part of the software product. This usually must be installed with the .obj portion of the product.
fnt	Printer fonts for that product
info	Databases containing documentation for that product that is accessible through InfoExplorer.
msg	System message catalogs
obj	The executable code for the software product. Contains the usr and root parts of the product.

This appendix includes information about the following optional software products:

Optional software products are listed in the sequence in which they appear on a complete stacked factory tape.

Version 3

Base Operating System (BOS)	Go to page 17-5
Base System Locales	Go to page 17-6
Base System Messages	Go to page 17-8
InfoExplorer Databases for Version 3.2	Go to page 17-9
INed editor	Go to page 17-11
Base Application Development Toolkit	Go to page 17-12
BOSEXT1 (BOS Extensions 1)	Go to page 17-14
BOSEXT2 (BOS Extensions 2)	Go to page 17-16
Base Operating System Network Facilities (BOSNET)	Go to page 17-19
Text Formatting Services	Go to page 17-22
HANFS (High Availability for Network File Systems)	Go to page 17-24
Data Encryption Standards Library Routines (U.S. only)	Go to page 17-26
Extended License Information Package	Go to page 17-27
DOS Server	Go to page 17-28
XL C Compiler	Go to page 17-29
FDDI	Go to page 17-30
Block Multiplexer Channel	Go to page 17-31

Separately Purchasable Software Products

AIXwindows Environment	Go to page 17-32
AIXwindows Interface Composer	Go to page 17-38
VS COBOL Compiler	Go to page 17-41
VS COBOL Run Time Environment	Go to page 17-42
3278/79 Emulation	Go to page 17-43
3270 Host Connection Program	Go to page 17-44
InfoCrafter	Go to page 17-46
NetWare	Go to page 17-47
PC Simulator	Go to page 17-48
SNA Services	Go to page 17-50
Network Management	Go to page 17-53
Computer Graphics Interface Toolkit	Go to page 17-57
Graphics File Translator	Go to page 17-58
Graphics Plotting System	Go to page 17-59
Xstation Manager	Go to page 17-60
XL FORTRAN Compiler	Go to page 17-62
XL FORTRAN Run Time Environment	Go to page 17-63
XL PASCAL Compiler	Go to page 17-64
XL Pascal Run Time Environment	Go to page 17-66

Ada	Go to page 17-67
Ada Run Time Environment	Go to page 17-69
Open Systems Interconnection Messaging and Filing (OSIMF)	Go to page 17-70
ESSL	Go to page 17-72

Base Operating System (BOS)

Product Description

The Version 3.2 Base Operating System (BOS) and data files such as terminfo.

Option Names

bos.data

This option contains data files needed by bos.obj such as the **terminfo** files. This option also sets up the directories needed by InfoExplorer and the **man** command. It is strongly recommended that this option be installed when you install bos.obj, since bos.obj only supports the following terminal types without bos.data installed:

ibm5081	vt100
hft	vt100-nam
ibm3151	vt100x
ibm3161	ibm5550
ibm3163	ibm5570
ibm3164	vt220
wy60-316X	vt320
wyse60-316X	vt330

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
bos.data	bos.obj AIX Version 3.2 Base Operating System

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

Base Operating System (BOS) Runtime	128.0	(plus paging, if paging needs exceed 32 megabytes)
Sharable Portion of BOS (bos.data)	1.0	

Special Hardware Required

None

Suggested Reading

None

Base System Locales

Product Description

The Base System Locales define the language environments that are desired on the system. The locale package also provides keyboard maps and fonts. Version 3.2 includes support for multiple codesets that meet international standards, as well as supporting the codeset used in previous releases. During installation of the Version 3.2 Base Operating System (BOS), support for the appropriate codesets is automatically installed. However, the system defaults to the codeset of the previous releases. The option names that follow include industry standard (ISO8859, EUC (Extended Unix Codeset)) codesets and the previously released codesets (IBM-850, IBM-932). Select one option for each language environment on your system. For example, to install both the IBM-850 locale and the ISO locale for French in France, select **bsl.fr_FR**. To select, for example, just the IBM-850 locale for France, select **bsl.fr_FR.pc**.

Option Names

<code>bsl.da_DK.aix.loc</code>	Base System Locale ISO8859-1 code set – Danish
<code>bsl.da_DK.pc.loc</code>	Base System Locale IBM-850 code set – Danish
<code>bsl.de_CH.aix.loc</code>	Base System Locale ISO8859-1 code set – Swiss German
<code>bsl.de_CH.pc.loc</code>	Base System Locale IBM-850 code set – Swiss German
<code>bsl.de_DE.aix.loc</code>	Base System Locale ISO8859-1 code set – German
<code>bsl.de_DE.pc.loc</code>	Base System Locale IBM-850 code set – German
<code>bsl.el_GR.aix.loc</code>	Base System Locale ISO8859-7 code set – Greek
<code>bsl.en_GB.aix.loc</code>	Base System Locale ISO8859-1 code set – U.K. English
<code>bsl.en_GB.pc.loc</code>	Base System Locale IBM-850 code set – U.K. English
<code>bsl.en_US.aix.loc</code>	Base System Locale ISO8859-1 code set – U.S. English
<code>bsl.en_US.pc.loc</code>	Base System Locale IBM-850 code set – U.S. English
<code>bsl.es_ES.aix.loc</code>	Base System Locale ISO8859-1 code set – Spanish
<code>bsl.es_ES.pc.loc</code>	Base System Locale IBM-850 code set – Spanish
<code>bsl.fi_FI.aix.loc</code>	Base System Locale ISO8859-1 code set – Finnish
<code>bsl.fi_FI.pc.loc</code>	Base System Locale IBM-850 code set – Finnish
<code>bsl.fr_BE.aix.loc</code>	Base System Locale ISO8859-1 code set – Belgian French
<code>bsl.fr_BE.pc.loc</code>	Base System Locale IBM-850 code set – Belgian French
<code>bsl.fr_CA.aix.loc</code>	Base System Locale ISO8859-1 code set – Canadian French
<code>bsl.fr_CA.pc.loc</code>	Base System Locale IBM-850 code set – Canadian French
<code>bsl.fr_FR.aix.loc</code>	Base System Locale ISO8859-1 code set – French
<code>bsl.fr_FR.pc.loc</code>	Base System Locale IBM-850 code set – French
<code>bsl.fr_CH.aix.loc</code>	Base System Locale ISO8859-1 code set – Swiss French
<code>bsl.fr_CH.pc.loc</code>	Base System Locale IBM-850 code set – Swiss French
<code>bsl.is_IS.aix.loc</code>	Base System Locale ISO8859-1 code set – Icelandic
<code>bsl.is_IS.pc.loc</code>	Base System Locale IBM-850 code set – Icelandic
<code>bsl.it_IT.aix.loc</code>	Base System Locale ISO code set – Italian
<code>bsl.it_IT.pc.loc</code>	Base System Locale IBM-850 code set – Italian

bsl.ja_JP.aix.loc	Base System Locale IBM–eucJP code set – Japanese Selection installs en_JP.ISO8859–1 – Japanese English
bsl.ja_JP.pc.loc	Base System Locale IBM–932 code set – Japanese Selection installs en__JP.IBM–850 – Japanese English
bsl.ja_JP.com.loc	Japanese Character Support
bsl.nl_BE.aix.loc	Base System Locale ISO8859–1 code set – Belgian Dutch
bsl.nl_BE.pc.loc	Base System Locale IBM–850 code set – Belgian Dutch
bsl.nl_NL.aix.loc	Base System Locale ISO8859–1 code set – Netherlands Dutch
bsl.nl_NL.pc.loc	Base System Locale IBM–850 code set – Netherlands Dutch
bsl.no_NO.aix.loc	Base System Locale ISO8859–1 code set – Norwegian
bsl.no_NO.pc.loc	Base System Locale IBM–850 code set – Norwegian
bsl.pt_PT.aix.loc	Base System Locale ISO8859–1 code set – Portuguese
bsl.pt_PT.pc.loc	Base System Locale IBM–850 code set – Portuguese
bsl.sv_SE.aix.loc	Base System Locale ISO8859–1 code set – Swedish
bsl.sv_SE.pc.loc	Base System Locale IBM–850 code set – Swedish
bsl.tr_TR.aix.loc	Base System Locale ISO8859–9 code set– Turkish
bsl.aix31..imk.loc	3.1 Input Keymaps
bsl.greek.fnt.loc	HFT Greek Font Library
bsl.lat–1.fnt.loc	HFT Latin–1 Font Library
bsl.turki.fnt.loc	HFT Turkish Font Library

Prerequisite Software

None

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

Language locales (total)	12.5
--------------------------	------

Special Hardware Required

None

Suggested Reading

“Understanding Locale”
“How to Change Your Locale”
“Understanding Code Set Strategy”

Base System Messages

Product Description

Contains system messages in the language you specify for the Version 3.2 Base Operating System.

Option Names

bsmNI_BE.msg	Base System Messages – Belgian Dutch
bsmEn_US.msg	Base System Messages – U.S. English
bsmFr_FR.msg	Base System Messages – French
bsmDe_DE.msg	Base System Messages – German
bsmIt_IT.msg	Base System Messages – Italian
bsmJa_JP.msg	Base System Messages – Japanese
bsmNo_NO.msg	Base System Messages – Norwegian
bsmEs_ES.msg	Base System Messages – Spanish
bsmSv_SE.msg	Base System Messages – Swedish

Prerequisite Software

None

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

English	6.0
German	5.6
Spanish	5.9
French	5.6
Italian	5.9
Belgium-Dutch	5.7
Norwegian	5.6
Swedish	5.3
Japanese	9.6

Special Hardware Required

None

Suggested Reading

None

InfoExplorer Databases for Version 3.2

Product Description

The InfoExplorer Databases you choose to install are accessed with the InfoExplorer retrieval tool installed with your Version 3.2 Base Operating System. These databases contain on-line hypertext documentation for your Base Operating System and other licensed programs. The three option names listed below are shipped with the Version 3.2 Base Operating System. Some other software products have separately installable databases containing documentation for those products. For more information on a specific software product, refer to the listing for that product in this Appendix.

Option Names

bssiEn_US.info	The Base System Standard Information option contains the following on-line documentation: <ul style="list-style-type: none">• Task Index• Commands List• Book List• Messages Index• On-line Help Information• Information for daily system users• Information for system managers. <p>Note: If you ordered a preloaded system, this option was preinstalled.</p>
bseiEn_US.info	The Base System Delivered Education option contains tutorials to help you learn more about InfoExplorer and .
bspiEn_US.info	The Base System Programming Information option contains the following on-line documentation for programmers: <ul style="list-style-type: none">• XL C Compiler• Information for programming the Base Operating System, communications, and devices tools.

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
bssiEn_US.info	bos.data
bseiEn_US.info	bssiEn_US.info
bspiEn_US.info	bssiEn_US.info

Software Processes to Stop

None

Special Installation Instructions

If you ordered InfoExplorer in any other languages besides English, be sure you install your primary language first.

InfoExplorer databases cannot be installed on an Xstation 120.

Disk Space Required (in Megabytes (MB))

Base System Standard Information	48.4
Base System Delivered Education	3.8
Base System Programming Information	40.2

Special Hardware Required

None

Suggested Reading

None

INed

Product Description

INed is a full-screen text editor that allows you to view, enter, and revise text at any location in the editor window.

Option Names

INed.obj INed Editor

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
INed.obj	bsm <i>Language</i> .msg, where <i>Language</i> is the abbreviation for your language	Base System Messages option for your primary language

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

INed Editor 1.3

Special Hardware Required

None

Suggested Reading

None

Base Application Development Toolkit

Product Description

The Base Application Development Toolkit contains commands, files, and libraries required to develop software applications.

Option Names

There are two install images, a usr install (bosadt.obj) and a shared install (bosadt.data).

bosadt.bosadt.obj

The Base Application Development Toolkit consists of miscellaneous programs for coding, debugging and source control, and contains help files for the **SCCS** commands.

The DBX Symbolic Debugger is a multi-language debugger. SCCS gives programmers the ability to control and account for changes made to the source code and documentation files.

The MAKE program maintains up-to-date versions of programs.

Some of the other tools included are:

as – assembler

cpp – pre-processor

cb – C Source Beautifier

cflow – Charts External References

cxref – C Source Cross Reference Tool

lint – C Code Checker

regcmp – Pattern Compiler for C source

lex – Lexical Analyzer Generator

yacc – Parser Generator.

bosadt.bosadt.data

Contains help information for the **SCCS** commands.

bosadt.lib.obj

The Base Development Libraries & Include Files option contains the include files and miscellaneous libraries not needed by the base system. They are needed in order to compile applications that include standard headers.

bosadt.prof.obj

The Base Profiling Support option contains profiled versions of the major libraries.

bosadt.xde.obj

The AIXwindows Development Environment (XDE) option is an interactive, multiwindow environment for debugging. XDE only runs on AIXwindows.

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
bosadt.xde.obj	bosadt.bosadt.obj Base Application Development Toolkit

Software Processes to Stop

None

Special Installation Instructions

Warning: For compatibility, symbolic links to the `/etc` directory are created for several files. This may cause the directory to be extended. Before installing be sure that the `/` (root) filesystem is not full.

Disk Space Required (in Megabytes (MB))

Application Development Toolkit	4.3
Sharable portion of Application Development Toolkit	0.2
SCCS Command Help Information	
Base Development Includes and Libraries	7.5
Base Profiling Support	2.1
X-Development Environment (<code>xde</code>)	0.3

Special Hardware Required

None

Suggested Reading

None

BOSEXT1

Product Description

This software product contains a variety of options that support or enhance the Base Operating System. This is a collection of optional software that is not needed by bos.obj but may be required by other software products.

Option Names

bosext1.csh.obj	The C Shell option is the command line interpreter from the BSD 4.3 operating system. It is recommended that this option be installed for users that are familiar with the BSD operating system.
bosext1.ecs.obj	The Remote Customer Services option provides an integrated approach to diagnosing and correcting hardware and software problems. This option provides an interface that supports the following: <ul style="list-style-type: none">• Connecting to the Information Network• Maintaining profiles• Performing problem determination• Reviewing system information• Preparing or reviewing problem descriptions.
bosext1.extcmds.obj	The Extended Commands option is a collection of miscellaneous commands such as axeb , ebxa , banner , bc , cal , calendar , connect , dc , and factor .
bosext1.extcmds.data	This option is the shared data portion of bosext1.extcmds.obj software package.
bosext1.mh.obj	The Message Handler option enables you to create, distribute, receive, view, process, and store messages.
bosext1.uucp.obj	The Basic Networking Utilities option is the UNIX-to-UNIX Copy Program (UUCP) that allows communication between UNIX systems over dial-up telephone lines, hard-wired communication lines and TCP/IP.
bosext1.vdidd.obj	The CGI Device Drivers option is required to use the GSS graphics tool collection.

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
bosext1.ecs.obj	bosext1.uucp.obj	Basic Networking Utilities
bosext1.extcmds.data	bos.data	Base Operating System (BOS)

Software Processes to Stop

None

Special Installation Instructions

It is highly recommended that you install bosext1.extcmds.data when you are installing bosext1.extcmds.obj.

Disk Space Required (in Megabytes (MB))

C Shell	1.0
Remote Customer Services	1.3
Extended Commands	0.3
Sharable Portion of Extended Commands	0.4
Mail Handler (MH)	5.3
Unix-to-Unix Copy Program (UUCP)	1.3
CGI Device Drivers	2.3

Special Hardware Required

A modem is required for bosext1.ecs.obj.

Suggested Reading

None

BOSEXT2

Product Description

This software product contains a variety of options that support or enhance the Base Operating System. This is a collection of optional software that is not needed by bos.obj, but may be required by other software products.

Option Names

bosext2.acct.obj	The Accounting System option allows you to collect and report on individual and group use of various system resources.
bosext2.ate.obj	The Asynchronous Terminal Emulation option is a menu-driven program that enables users to communicate between a workstation and a remote host. The workstation acts as a terminal connected to the remote host. With ATE, you can log in to a remote host, execute commands, and use files on that system as a local user. ATE allows you to transfer files between the workstation and the remote host through x-modem protocol. ATE also allows you to emulate the VT100 terminal.
bosext2.dlc8023.obj	The IEEE Ethernet (802.3) Data Link Control option provides full-duplex peer data transfer capabilities over an Ethernet Local Area Network. The IEEE 802.3 Ethernet Data Link Control uses the IEEE 802.3 CSMA/CD medium access control and a superset of the IEEE 802.2 logical link control-protocol.
bosext2.dlcether.obj	The Standard Ethernet Data Link Control option provides full-duplex peer data transfer capabilities over a Standard Ethernet Local Area Network, using the Xerox Ethernet CSMA/CD medium access control and a superset of the IEEE 802.2 logical link control-protocol.
bosext2.dlcsdlc.obj	The Synchronous Data Link Control (SDLC) option provides the access procedure for transparent and code-independent information interchange across teleprocessing and data networks.
bosext2.dlcqlc.obj	The Qualified Logical Link Control option provides a half-duplex access procedure for attachment to X.25 packet-switching network. DLCQLC provides full support for the 1980 and 1984 versions of the CCITT recommendation relevant to SNA-to-SNA connections. It allows point-to-point connections over an X.25 network between a pair of primary and secondary link stations.
bosext2.dlctoken.obj	The Token-Ring Data Link Control option provides full-duplex peer transfer capabilities over a Token-Ring Local Area Network, using the Token-Ring IEEE 802.5 medium access control and a superset of the IEEE 802.2 logical link control-protocol.
bosext2.dosutil.obj	The DOS Utilities option contains utilities for handling DOS diskettes.

bosext2.games.obj	This option contains the following games: arithmetic, bj, craps, fish, fortune, hangman, moo, ttt and quiz.
bosext2.x25app.obj	This option contains X.25 commands that allow users to use the X.25 network without doing any programming. It also contains examples of X.25 applications. The following commands are included: xcomms , xtalk , xmanage , and xmonitor . The xcomms command invokes one of the X.25 commands. The xtalk command allows users to establish a session with other X.25 users, to transfer files, or to talk. The xmanage command displays status information for an X.25 port or manages the port's connections to the network. The xmonitor command monitors the activity on an X.25 port.
bosext2.lrn.data	This option contains learn command lessons.

Prerequisite Software

None

Software Processes to Stop

Warning: Be sure all activity has ceased before stopping the software.

The ATE software must be stopped before installing bosext2.ate.obj or updating it.

8. To determine if ATE is active, type `ps -e | grep ate` and press Enter.

If ATE is active, you will see a message similar to the following:

```
109      -1:41      ate
```

In this example, 109 is the Pid for ATE.

9. Enter the following to terminate ATE:

```
kill -9 Pid, where Pid is the process number ID on your system.
```

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

Accounting Services	1.0
Asynchronous Terminal Emulation (ATE)	0.2
IEEE 802.3 Data Link Control	0.6
Standard Ethernet Data Link Control	0.6
SDLC Data Link Control	0.3
X.25 QLLC Data Link Control	0.3
Token-ring Data Link Control	0.3
DOS Utilities	0.4
Games	0.8
X.25 Applications, API, and sample source	0.5
Learning BOS information	2.9

Special Hardware Required

ATE supports direct (cabled) and modem communications. Local connections allow a maximum distance of 4000 feet (for RS422A connections).

Suggested Reading

None

Base Operating System Network Facilities (BOSNET)

Product Description

The Base Operating System Network Facilities provides network support for the operating system. It includes TCP/IP, NFS, NCS, and an SNMP agent.

Option Names

bosnet.ncs.obj	The Network Computing System (NCS) option implements remote procedure calls. NCS is used to program distributed applications utilizing a client/server model.
bosnet.nfs.obj	The Network File System/NIS/RPC Libraries & Facilities option is a distributed file system that allows users to access files and directories located on remote computers and treat those files and directories as if they were local. Network Information Service (NIS) provides NFS with the information necessary for file sharing.
bosnet.snmpd.obj	The Simple Network Management Protocol (SNMP) option provides SNMP agent functionality including SNMP request processing for MIBII variables and trap generation.
bosnet.tcpip.obj	The Transmission Control Protocol/Internet Protocol (TCP/IP) option provides TCP/IP applications, including daemons (inetd , rlogind , named , routed , gated , timed) and user commands (remote print facilities , rexec , rlogin , rsh , talk , telnet , ftp , tftp , rcp , arp , finger , host , hostid , hostname , ifconfig , netstat , ping , route , ruptime , rwho , setclock , trpt , htable , rdist , rdump , rmt , rrestore , timedc , whois).

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
bosnet.ncs.obj	bosnet.tcpip.obj	Transmission Control Protocol/Internet Protocol (TCP/IP)
bosnet.snmpd.obj	bosnet.tcpip.obj	Transmission Control Protocol/Internet Protocol (TCP/IP)
bosnet.nfs.obj	bosnet.tcpip.obj	Transmission Control Protocol/Internet Protocol (TCP/IP)

Software Processes to Stop

Warning: Be sure all user activity has ceased before stopping processes.

Note: If you are installing onto a machine that will be a diskless server, you must also perform the following procedures on each of the diskless clients *of that server*.

For bosnet.tcpip.obj, all TCP/IP processes must be stopped by performing the following steps:

1. To determine if processes are active, type `lssrc -g tcpip` and press Enter.
2. If any TCP/IP processes are active, enter the following to terminate them:

```
stopsrc -g tcpip
```

For bosnet.nfs.obj, NFS processes must be stopped by performing the following steps:

3. To determine if any NFS processes are active, type the following and press Enter.

```
lssrc -a
```

4. If any NFS processes are active, enter the following to terminate them:

```
stopsrc -g nfs
```

```
stopsrc -g yp
```

```
stopsrc -g keyserv
```

```
stopsrc -g portmap
```

For bosnet.snmpd.obj, the SNMPD process must be stopped by performing the following steps:

1. To determine if the SNMPD process is active, type `lssrc -s snmpd` and press Enter.
2. If the SNMPD process is active, you will enter `stopsrc -s snmpd` to terminate it.

For bosnet.ncs.obj, all NCS processes must be stopped by performing the following steps:

1. To determine if any NCS processes are active, type `lssrc -g ncs` and press Enter.
2. If any NCS software processes are active, enter `stopsrc -g ncs` to terminate them.

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

Network Computing System (NCS)	1.1
NFS/NIS/RPC Libraries and Utilities	1.9
Simple Network Mgt Protocol Agent	3.7
TCP/IP Applications	3.8

Special Hardware Required

None

Suggested Reading

- For bosnet.ncs.obj: Network Computing System
For configuration information, see the article, "Configuring NCS."
For specific documentation, see the article, "Introduction to the Network Computing System (NCS)."
- For bosnet.nfs.obj: Network File System/NIS/RPC Libraries and Facilities
For configuration information, see the article, "Configuring NFS on Your System."
For specific documentation, see the article, "Network File System (NFS) Overview for System Management."

For bosnet.snmpd.obj:

Simple Network Management Protocol Daemon

For configuration information, see the article,
"Configuring the SNMP Daemon."

For specific documentation, see the article,
"xgmon Overview for Programmers."

For bosnet.tcpip.obj :

TCP/IP applications

For configuration information, see the articles,
"Understanding Installation and Configuration for TCP/IP" and
"TCP/IP Configuration Problems."

For specific documentation, see the article,
"TCP/IP Overview for System Management."

Text Formatting Services

Product Description

The Text Formatting System provides services supporting the formatting and printing of a wide variety of documents, including business and technical reports, journal articles, books, and reports formatted for printers or photo-typesetters. The Text Formatting System consists of the familiar UNIX operating system NROFF and TROFF utilities and related commands supporting functions from the Documenter's Workbench Release 2.0 package, as well as enhancements and additional commands to provide 4.3 BSD functions.

Option Names

txtfmt.bib.obj	Bibliography Support
txtfmt.bib.data	The shared data portion of Bibliography Support
txtfmt.graf.obj	Base Graphic Commands
txtfmt.spell.obj	Writer's Tools
txtfmt.spell.data	The shared data portion of Writer's Tools
txtfmt.tfs.obj	Text Formatting Services
txtfmt.tfs.data	The shared data portion of Text Formatting Services
txtfmt.ts.obj	TranScript Tools
txtfmt.xpv.obj	Troff Xpreviewer
txtfmt.hplj.fnt	Fonts for Hewlett-Packard Laser Jet Printer
txtfmt.ibm3812.fnt	Fonts for 3812 Printer
txtfmt.ibm3816.fnt	Fonts for 3816 Printer

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
txtfmt.bib.obj	txtfmt.bib.data	The shared data portion of Bibliography Support
txtfmt.tfs.obj	txtfmt.tfs.data	The shared data portion of Text Formatting Services
txtfmt.spell.obj	txtfmt.tfs.obj txtfmt.spell.data	Text Formatting Services The shared data portion of Writer's Tools
txtfmt.hplj.fnt	txtfmt.tfs.obj	Text Formatting Services
txtfmt.ibm3812.fnt	txtfmt.tfs.obj	Text Formatting Services
txtfmt.ibm3816.fnt	txtfmt.tfs.obj	Text Formatting Services
txtfmt.xpv.obj	X11fnt.iso88591.aix.fnt t X11fnt.ibm850.pc.fnt X11fnt.coreX.fnt	AIXwindows Latin 1 (ISO 8859-1) Fonts AIXwindows Latin 1 (IBM-850) Fonts AIXwindows Core X11 Fonts
txtfmt.ts.obj	txtfmt.tfs.obj	Text Formatting Services

Software Processes to Stop

None

Special Installation Instructions

You do *not* have to shut down and reboot your system after installation in order to make this product available for use.

Disk Space Required (in Megabytes (MB))

Bibliography Support	0.2
Shared Data Portion of Bibliography Support	0.1
Base Graphic Commands	1.2
Writers' Tools	0.8
Shared Data Portion of Writers' Tools	0.2
Formatting Services	3.4
Shared Data Portion of Formatting Services	0.7
TranScript Tools	2.3
Troff Xpreviewer	0.6
Fonts for HP Laserjet II	3.6
Fonts for 3812 Printer	3.3
Fonts for 3816 Printer	3.0

Special Hardware Required

None

Suggested Reading

UNIX System V Documenter's Workbench User's Guide.

UNIX System V Documenter's Workbench Reference Manual.

HANFS (High Availability for Network File Systems)

Product Description

High Availability for Network File Systems (HANFS) provides enhanced availability of data beyond that provided by traditional Network File System (NFS) implementations.

Option Names

hanfs.obj High Availability for Network File Systems.

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
hanfs.obj	bosnet.tcpip.obj	Transmission Control Protocol/ Internet Protocol (TCP/IP)
	bosnet.nfs.obj	Network File System

Software Processes to Stop

All NFS and HANFS software processes must be inactive.

Warning: Be sure that all user activity has ceased before stopping processes.

1. To determine if any NFS or HANFS software processes are active, type `lssrc -a` and press Enter.
2. If any NFS software processes are active, enter the following to terminate the software processes:

```
stopsrc -g nfs
stopsrc -g keysevr
stopsrc -g yp
stopsrc -s portmap
```
3. If any HANFS software processes are active, enter the following to terminate them:

```
stopsrc -g hanfs
```

Special Installation Instructions

None

Note: Before using the software, be sure to read the README file. This file contains up-to-date product information.

Disk Space Required (in Megabytes (MB))

High Availability for Network File Systems 0.5

Special Hardware Required

SCSI Adapter(s), part number 31G9722.

SCSI Adapter-to-Device Cables, part number 00G0959.

Suggested Reading

For hanfs.obj: For configuration, see the article, "Configuring HANFS on Your System."
For specific documentation, see the articles, "High Availability for Network File Systems (HANFS) Overview for System Management" and "Maintaining HANFS on Your System."

Data Encryption Standards Library Routines (U.S. only)

Product Description

Contains the Data Encryption Standards Library Routines (U.S. only). This component is installed for preinstalled systems that reside and remain in the United States only.

Option Names

des.obj Data Encryption Standards Library Routines (U.S. only).

Prerequisite Software

None

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

Data Encryption Standards Library Routines 0.1

Special Hardware Required

None

Suggested Reading

None

Extended License Information Package

Product Description

The Extended License Information Package allows you to gain access to databases built by InfoCrafter.

Option Names

infoxl.obj Extended License Information Package

Prerequisite Software

None

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

License Extension 0.1

Special Hardware Required

None

Suggested Reading

None

DOS Server

Product Description

DOS Server provides a means of exchanging files, and accessing applications between a personal computer and the family of operating systems.

Option Names

pci.obj DOS Server for use with the Access for DOS Users

Prerequisite Software

None

Software Processes to Stop

Stop pci.obj prior to installing another version of the software.

Special Installation Instructions

If you are installing pci.obj and plan to run the DOS Server over a network, you should install bosnet.tcpip.obj.

To start DOS Server after it is installed, type `sh /etc/rc.pci` and press Enter.

To start DOS Server every time your system is booted, take the following steps:

1. To change the rcpci entry in the **/etc/inittab** file, type the following and press Enter:
`chitab "rcpci:2:wait:/etc/rc.pci > /dev/console 2>&1 # Start DOS
Server Daemons"`
2. To verify the change, type the following and press Enter:
`lsitab rcpci`

The following message indicates that the change has been made:

```
rcpci:2:wait:/etc/rc.pci > /dev/console/ 2>&1 # Start DOS Server  
Daemons
```

Disk Space Required (in Megabytes (MB))

DOS Server	1.0
------------	-----

Special Hardware Required

If you plan to run DOS Server over a network, you will need a Token-Ring or Ethernet adapter. For an RS232 or RS422 connection, you will need an RS232 or RS422 adapter, respectively.

Suggested Reading

None

XL C Compiler

Product Description

XL C Compiler is part of Version 3.2 and produces optimized object code that uses the system hardware.

Option Names

xlccmp.obj XL C Compiler

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
xlccmp.obj	bosadt.bosadt.obj	Base Application Development Toolkit
	bosadt.lib.obj	Base Development Libraries and Include Files

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

XL C Compiler 3.9

Special Hardware Required

None

Suggested Reading

For additional information, read the Configuration File section in the *XL C User's Guide*.

FDDI

Product Description

FDDI provides support for the device driver layer for the Fiber Distributed Data Interface protocol.

Option Names

fddi.obj FDDI operational microcode

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
fddi.obj	fddi.mc	FDDI operational microcode
(If you want TCP/IP support, the following prerequisite is also required.)		
fddi.obj	bosnet.tcpip.obj	Transmission Control Protocol/ Internet Protocol (TCP/IP)

Software Processes to Stop

All code which is using FDDI must be stopped prior to upgrade of FDDI. This includes detaching any tcpip links over FDDI.

Special Installation Instructions

To insure full use of FDDI support, rebooting the machine after installation is suggested.

Disk Space Required (in Megabytes (MB))

FDDI operational microcode 0.3

Special Hardware Required

Software will not be useable without installation of supported FDDI cards.

Suggested Reading

None

Block Multiplexer Channel Connectivity

Product Description

The Block Multiplexer Channel Connectivity communication allows the system to communicate to a S/370 or S/390 host using the Block Multiplexer Channel. TCP/IP is supported and the TCP/IP Version 2.2 for VM (5735–FAL) is required at the host. This new enhancement allows the system to be used as a gateway between the S/370 VM host and the downstream network that consist of LAN or WAN. Therefore, distributed systems can access the VM resource, NFS and the TCP/IP applications resident at the S/370 host.

Option Names

370p.obj	The device driver and necessary supporting data files.
----------	--

Software Processes to Stop

None

Special Installation Instructions

None

Special Hardware Required

Block Multiplexer Channel Adapter #2755
Block Multiplexer Channel Adapter Cable #2758
Block Multiplexer Channel Adapter Assembly #2758

RAM in Megabytes (MB)

Block Multiplexer Channel	0.3
---------------------------	-----

Suggested Reading

370 PCA User Guide and Programming Reference (SC23–2427)

AIXwindows Environment

Product Description

AIXwindows Environment is a collection of graphical user interfaces that provides the ability to develop and run advanced graphics applications, Enhanced Xwindows applications, and AIXwindows applications.

Option Names

X11rte.obj

The AIXwindows Run Time Environment option includes:

- X server (based on M.I.T. X11.4) and the 2-D GAI load modules on which it depends
- Supported X clients such as aixterm and xclock and their resource (default) files
- Motif 1.1 Window Manager
- A minimal set of fonts for PC-850 and ISO 8859-1 encodings
- Some X client libraries (the main ones are included in bos.obj—the Base Operating System)

X11rte.ext.obj

The AIXwindows Run Time Environment Extensions option includes the following additional supported 2-D X function:

- Adobe's Display PostScript (DPS) X server extension with fonts and utilities
- Motif SMIT—the graphical version of the System Management Interface Tool
- fontutil—the Japanese font utility
- InfoExplorer on-line documentation facility and its fonts
- AIXwindows Desktop (enhancement of X.desktop Version 3.0), with bitmap and rules files for English.

X11dev.obj

This option includes the following libraries and C include (.h) files for X client program development:

- Motif Resource Manager
- Motif User Interface Language (libUil.a and uil compiler)
- M.I.T. X Display Manager Control Protocol (libXdmcp.a)
- FORTRAN binding to X (libXfx.a)
- C include files for Xmu (X miscellaneous utilities), Xm (Motif), Mrm, Uil, Xaw (X Athena widgets), M.I.T. X11.4 extensions, X extensions, and DPS X clients.

X11dev.src

This option includes the following source code for unsupported X clients and libraries:

- Source code for X11.4 libXau.a, libXmu.a, and libXaw.a
- Source code for libmbX.a
- Source code for X11.4 libXext.a and related demos
- Source code for the M.I.T. X11.4 clients, demos, and make utilities
- Source code for Motif 1.1 demo programs
- Source code for DPS example programs
- Source code and fonts for the unsupported libXgsl.a

X11fnt.iso88591.aix.fnt	AIXwindows Latin 1 (ISO8859–1) Fonts
X11fnt.iso88592.fnt	AIXwindows Latin 2 (ISO8859–2) Fonts
X11fnt.iso88593.fnt	AIXwindows Latin 3 (ISO8859–3) Fonts
X11fnt.iso88594.fnt	AIXwindows Latin 4 (ISO8859–4) Fonts
X11fnt.iso88595.fnt	AIXwindows Cyrillic (ISO8859–5) Fonts
X11fnt.iso88597.aix.fnt	AIXwindows Greek (ISO8859–7) Fonts
X11fnt.iso88599.aix.fnt	AIXwindows Turkish (ISO8859–9) Fonts
X11fnt.ibm850.pc.fnt	AIXwindows Latin 1 (IBM–850) Fonts
X11fnt.kanji.aix.fnt	AIXwindows Kanji Fonts
X11fnt.coreX.fnt	M.I.T. X11.4 75 dpi and 100 dpi fonts
X11fnt.oldX.fnt	M.I.T. X11.3 contrib fonts: bmug, info-mac, oldx10, and oldx11
X11_3diEn_US.info	AIXwindows/3D Documentation – U.S. English
X11deviEn_US.info	AIXwindows Documentation – U.S. English
X11mEn_US.msg	AIXwindows Messages – U.S. English
X11mNI_BE.msg	AIXwindows Messages – Belgian Dutch
X11mFr_FR.msg	AIXwindows Messages – French
X11mDe_DE.msg	AIXwindows Messages – German
X11mlt_IT.msg	AIXwindows Messages – Italian
X11mJa_JP.msg	AIXwindows Messages – Japanese
X11No_NO.msg	AIXwindows Messages – Norwegian
X11Es_ES.msg	AIXwindows Messages – Spanish
X11Sv_Se.msg	AIXwindows Messages – Swedish
X11_3d.obj	3-D GAI load modules needed to run GL, graPHIGS and PEX on the Xserver
X11_3d.gl.rte.obj	AIXwindows/3D GL Run Time Environment
X11_3d.gl.dev.obj	AIXwindows/3D GL Development Utilities
X11_3d.gl.dev.src	AIXwindows/3D GL Development Sample Programs
X11_3d.graPHIGS.rte.obj	AIXwindows/3D graPHIGS Run Time Environment
X11_3d.graPHIGS.plot.obj	AIXwindows/3D graPHIGS Calcomp/Versatec Plotter Support
X11_3d.graPHIGS.kanji.fnt	AIXwindows/3D graPHIGS Kanji Fonts
X11_3d.graPHIGS.gks.obj	AIXwindows/3D graPHIGS GKS Compatibility Option
X11_3d.graPHIGS.muc.obj	AIXwindows/3D graPHIGS Remote Nucleus
X11_3d.graPHIGS.dev.src	AIXwindows/3D graPHIGS Development Sample Programs
X11_3d.graPHIGS.dev.obj	AIXwindows/3D graPHIGS Development Tutorial
X11_3d.graPHIGS.pex.obj	AIXwindows PHIGS Extension to X (PEX)

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
X11rte.obj	bos.obj bos.data	AIX Base Operating System AIX Base Operating System
X11rte.ext.obj	X11rte.obj	AIXwindows R.T.E.*
X11dev.obj	X11rte.obj	AIXwindows R.T.E.*
X11dev.src	X11dev.obj	AIXwindows Development Libraries and Include Files
X11fnt.iso88591.aix.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.iso88592.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.iso88593.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.iso88594.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.iso88595.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.iso88597.aix.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.iso88599.aix.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.ibm850.pc.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.kanji.aix.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.coreX.fnt	X11rte.obj	AIXwindows R.T.E.*
X11fnt.oldX.fnt	X11rte.obj	AIXwindows R.T.E.*
X11_3d.obj	X11rte.obj	AIXwindows R.T.E.*
X11_3d.gl.rte.obj	X11_3d.obj	AIXwindows/3D Support
X11_3d.gl.dev.obj	X11_3d.gl.rte.obj	AIXwindows/3D GL R.T.E.*
X11_3d.gl.dev.src	X11_3d.gl.dev.obj	AIXwindows/3D GL Development Utilities
X11_3d.graPHIGS.rte.obj	X11_3d.obj	AIXwindows/3D Support
X11_3d.graPHIGS.kanji.fnt	X11_3d.graPHIGS.rte.ob j	AIXwindows/3D graPHIGS R.T.E.*
X11_3d.graPHIGS.gks.obj	X11_3d.graPHIGS.rte.ob j	AIXwindows/3D graPHIGS R.T.E.*
X11_3d.gra- PHIGS.rnuc.obj	X11_3d.graPHIGS.rte.ob j	AIXwindows/3D graPHIGS R.T.E.*
X11_3d.graPHIGS.dev.src	X11_3d.graPHIGS.rte.ob j	AIXwindows/3D graPHIGS R.T.E.*
X11_3d.graPHIGS.dev.obj	X11_3d.graPHIGS.rte.ob j	AIXwindows/3D graPHIGS R.T.E.*
X11_3d.graPHIGS.pex.obj	X11_3d.obj	AIXwindows/3D Support
X11_3diEn_US.info	bssiEn_US.info	Base System Standard Information – U.S. English
X11mEn_US.msg	X11rte.obj	AIXwindows R.T.E.*
*Run Time Environment		

Software Processes to Stop

- Previous versions of AIXwindows must be stopped prior to installing later versions of the software.
- Before installing or applying an update to X11rte (X11rte.obj or X11rte.ext.obj), the **infod** daemon and the Xserver should be stopped.

To stop the infod daemon, first login as root .

Type the following:

```
stopsrc -s infod
```

and press Enter.

To stop the X server, simultaneously press the Ctrl, Alt, and Backspace keys.

Special Installation Instructions

To verify that the Personal graPHIGS API has been successfully installed:

1. Start AIXwindows
2. Change to the **/usr/lpp/graPHIGS/etc** directory.
3. Run the runivp script.
4. A wire frame robot arm appears in a window. To test the corresponding function:
 - a. Press the PF1 key to initiate motion in the robot arm
 - b. Press the PF4 key to exit the program before arm motion has stopped.
 - c. Press any PF key to exit the program after arm motion has stopped.

When you select the **X11_3d.graPHIGS.rnuc.obj lpp** option, a system file required for remote graPHIGS nucleus support over a network is modified and the necessary files are installed. The **/etc/services** file will contain the base port number to be used by remote graPHIGS nuclei. The default base port number is 8000. If this port number is already reserved for another purpose in the **/etc/services** file, a warning will be issued. The **/etc/services** file will not be modified to reserve port 8000. However, the default base port number will remain 8000 until modified in **/etc/services**.

If it is necessary to change the base port number, the line to be changed or appended should look like this:

```
graPHIGS      8000/tcp
```

where 8000 is the default base port number. To change the base port number to, for example, 9000, modify the above line as follows:

```
graPHIGS      9000/tcp
```

Note: In order for remote graPHIGS nucleus support to work over a network, it is mandatory that this base port number is the same for the computers that will be using remote graPHIGS nuclei.

The files **gPINIT**, **gPterm**, **gPhost**, and **gPq** are installed in the **/usr/lpp/graPHIGS/bin** directory. Additionally, the four script files are installed in **/usr/bin**. The gPterm script is used to terminate the remote graPHIGS nucleus. The gPhost script is used to add or delete host names that are permitted access to the remote nucleus. The gPq script is used to view the status of remote graPHIGS nuclei.

Note on static extensions linked into the Xserver:

Any extensions which have been linked in as part of the Xserver (**/usr/lpp/X11/bin/X**) will be lost during an installation or update of **X11rte.obj**. This is because the X server is relinked (recreated) anew during the installation/update process from the **/usr/lpp/X11/bin/X.o** archive. (This archive contains the component object modules which constitute the X server.) Such a loss will occur even if an update to **X11rte.obj** is applied and later rejected. The only way to recover such static extensions is to relink them with the new **X.o** to create a new X server.

Note on installing 3.1 X client applications on Version 3.2:

If an X client application designed to install and run on Version 3.1 (and thus AIXwindows 1.1) is to be installed on Version 3.2 (and thus AIXwindows 1.2), it may be necessary to run the X installation preparation script beforehand and afterwards. This script, **/usr/lpp/X11rte/xip**, will save (temporarily rename) the shared X client-side libraries and replace them with 3.1 versions suitable for linking with 3.1 X client applications. After the 3.1 X client application installation has completed, the script should be run again to remove the temporary 3.1 versions of the libraries and restore the saved (renamed) versions, which are suitable for running 3.1 and 3.2 X clients (as well as for linking with 3.2 X clients.)

If you are not absolutely sure that a 3.1 X client does not link at install time, then **xip** should be run. It requires just over 2.5 Mbytes (2618 Kbytes) free in the **/usr** file system to save the 3.2 versions of the shared X client-side libraries. Before the 3.1 X client application is installed, the root user executes:

```
/usr/lpp/X11rte/xip -b
```

and after the 3.1 X client application installation completes, the root user executes:

```
/usr/lpp/X11rte/xip -a
```

Disk Space Required (in Megabytes (MB))

AIXwindows Run Time Environment	10.5
AIXwindows Run Time Environment Extensions	21.1
AIXwindows Libraries and Include Files	5.7
AIXwindows Sample Programs	16.3
AIXwindows Development Fonts	6.5
AIXwindows 3D Support	4.9
AIXwindows GL Run Time Environment	1.0
AIXwindows GL Development Utilities	0.6
AIXwindows GL Development Sample Programs	0.6
Personal graPHIGS Run Time Environment	6.4
Personal graPHIGS Plotter Support	2.6
Personal graPHIGS KJ Fonts	0.8
Personal graPHIGS GKS Compatibility	0.7
Personal graPHIGS Remote Nucleus	0.3
Personal graPHIGS Sample Programs	1.7
Personal graPHIGS Tutorial	4.0
PHIGS Extension to X (PEX)	4.4
AIXwindows Fonts (total)	16.3
AIXwindows Programming Documentation	28.6
AIXwindows Graphics Documentation	18.6
Messages/Help Text	0.4 per language

Special Hardware Required

None

Suggested Reading

None

AIXwindows Interface Composer

Product Description

AIXwindows Interface Composer (AIC) allows developers to interactively create and test sophisticated AIXwindows iconic user interfaces much more easily and quickly than ever before. Applications with iconic user interfaces are easy to learn, easy to use, and provide the user with the support needed to effectively work with the application.

Option Names

aic.obj	AIXwindows Interface Composer
aicmEn_US.msg	English System Messages
aicmFr_FR.msg	French System Messages
aicmEs_ES.msg	Spanish System Messages
aicmNI_BE.msg	Netherlands/Belgium System Messages

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
aic.obj	bosadt.bosadt.obj Base Application Development Toolkit
	bosadt.lib.obj Base Development Libraries and Include Files
	X11dev.obj AIXwindows Development Libraries and Include Files
	X11fnt.coreX.fnt M.I.T. X11.4 75dpi and 100 dpi fonts
	X11fnt.oldX.fnt M.I.T. X11.3 contrib fonts: bmug, info-mac, oldx10, and oldx11
	X11rte.obj AIXwindows Run Time Environment
	xlccmp.obj AIX XL C Compiler

Software Processes to Stop

None

Special Installation Instructions

As shipped, AIC is enabled with two licenses. This means that at most, two users of AIC can be operating at the same time on the same machine. For diskless machines, this means that at most two users of AIC can be operating at the same time on all machines served from the central server.

Adding Additional Licenses to AIC

Before enabling new licenses for AIC, the customer must purchase additional licenses. Licenses are purchased in increments of two.

The network host name, unique CPU ID of the machine from which AIC was installed, and network port number used by the license server are encoded in the license. The license must be regenerated if any of the following occur:

- The number of licenses owned by the customer changes.
- The CPU ID (serial number) changes because AIC is moved from one machine to another or the machine has its CPU upgraded or replaced.
- The machine has its network host name changed.
- The network port number used by AIC is clashing with some other product and must be changed.
- The customer deletes the license file.

Before Regenerating Licenses

The following four pieces of information must be obtained prior to regenerating the AIC licenses:

1. The number of licenses that have been purchased.
2. The network host name of the machine that will serve as the license server. At installation time, this is the host name of the machine on which AIC is being installed. This information can be obtained by running the command **hostname** on the server-to-be machine. If the machine does not have a hostname, use the name `localhost`.
3. The unique CPU ID number for the CPU that will serve as the license server. At installation time, this is the CPU ID of the machine on which AIC is being installed. This information can be obtained by running the command **uname -m** on the server-to-be machine.
4. The network port number AIC will use to contact the license server. By default this port number is 1600. The port number chosen should be greater than 1024 and less than 65535 and should not match any of the port numbers listed in the `/etc/services` file.

Regenerating Licenses

AIC is shipped with a program called `aickeygen` that can change the number of licenses, the host from which the licenses are served, and the network port number used by the license server. This program can be run after more licenses have been purchased or if the license file needs to be regenerated.

The `aickeygen` program is located in `/usr/lpp/aic/bin/aickeygen` and must be run as the root user. Using the information already obtained, run `aickeygen` by typing in the following

```
/usr/lpp/aic/bin/aickeygen <hostname> <cpuid> <port> <#lic>
```

where:

`<hostname>` is the network hostname of the license server machine.

`<cpuid>` is the unique CPU ID number for the license server machine.

`<port>` is the network port number used by the license server.

`<#lic>` is the number of the AIC licenses the license server will support after running `aickeygen`.

If any errors are reported, the license file will not be changed. Otherwise, the changes will be effective after the next license server restart.

Restarting the AIC License Server After Adding New Licenses

Changing the AIC license in any way requires the AIC license server to be restarted. When the server is restarted, any running instances of AIC will require the user to exit AIC, saving their files if necessary. For this reason, users should not be running AIC while changing the license.

To restart the license server without rebooting the server machine, enter the following commands:

```
stopsrc -s aicd
startsrc -s aicd
```

After restarting the license server, enter the following command to make sure that it has started successfully:

```
lssrc -s aicd
```

The output should show list `active` under the Status heading if the restart was successful. If it was not, the status will be shown as `inoperative`.

Debugging the License Server

The AIC license server uses the **syslog** facility to report error messages. By default, this facility is disabled. To enable it, take the following steps:

1. Become root and edit the file `/etc/syslog.conf` and add the following line to the end of the file:

```
*.err;daemon.debug /var/adm/messages
```
2. Restart the **syslog** daemon by typing:

```
kill -1 'cat /etc/syslog.pid'
```
3. Type the following:

```
touch /var/adm/messages
stopsrc -s aicd
startsrc -s aicd
```
4. Type:

```
lssrc -s aicd
```
5. If the output of `lssrc-s aicd` still shows `inoperative` as the status, edit the file `/var/adm/messages` to see why the AIC license server has failed. All messages from the AIC license server will be prefaced with `hostname aicd:` where `hostname` is the network host name of the license server machine and the process-id is the process ID of the AIC license server.

Disk Space Required (in Megabytes (MB))

AIXwindows Interface Composer	18.1
Messages/Help Text	0.2

Special Hardware Required

None

Suggested Reading

None

VS COBOL Compiler

Product Description

VS COBOL Compiler contains a Micro Focus-developed front end and a native code generator. The compiler aids the development and maintenance of COBOL applications targeted for compilation and execution on System/370 host mainframes in the VM/CMS and MVS operating environments. The compiler allows COBOL programs to run by being interpreted, dynamically loaded, or statically linked.

Option Names

cobolcmp.obj VS COBOL Compiler

Prerequisite Software

None

Software Processes to Stop

Stop cobolcmp.obj prior to installing another version of the software.

Special Installation Instructions

When you are installing cobolcmp.obj, it is highly recommended that you install bosadt.bosadt.obj.

Warning: For Updating VS COBOL Compiler:

As stated in the VS COBOL Compiler Installation Kit, the VS COBOL Compiler includes the VS COBOL Run Time Environment.

Do *not* apply an VS COBOL Run Time Environment (cobolrte.obj) update if you have an active update for the compiler. This would cause the loss of the files from the last committed version. You can find out if there is an uncommitted update (i.e. ACTIVE APPLY) by typing `lslpp -h cobolcmp.obj` with an output similar to the following example:

<u>Option Name</u>	<u>State</u>	<u>Event</u>	<u>Date/Time</u>	<u>Release</u>	
<u>User Name</u>					
cobolcmp.obj	ACTIVE	APPLY	11/08/91	01.01.0008.0005	
root					
	PENDING	COMMIT	11/08/91	01.01.0000.0000	
root					

Disk Space Required (in Megabytes (MB))

VS COBOL Compiler 5.3

Special Hardware Required

None

Suggested Reading

Language Reference for VS COBOL Compiler (SC23-2177)

User's Guide for VS COBOL Compiler (SC23-2178)

VS COBOL Run Time Environment

Product Description

VS COBOL Run Time Environment contains the necessary COBOL components to execute applications developed with the VS COBOL Compiler on another system.

Option Names

cobolrte.obj	VS COBOL Run Time Environment
cobolrtemEn_US.msg	VS COBOL Run Time Environment Messages – U.S. English
cobolrtemFr_CF.msg	VS COBOL Run Time Environment Messages – Canadian French
cobolrtemFr_FR.msg	VS COBOL Run Time Environment Messages – French
cobolrtemJp_JP.msg	VS COBOL Run Time Environment Messages – Japanese
cobolrtemSp_SP.msg	VS COBOL Run Time Environment Messages – Spanish

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
cobolrte.obj	cobolcmp.obj VS COBOL Compiler/6000

Software Processes to Stop

Stop cobolrte.obj prior to installing another version of the software.

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

VS COBOL Run Time Environment	1.9
Messages/Help Text	0.1 per language

Special Hardware Required

None

Suggested Reading

Language Reference for VS COBOL Compiler (SC23–2177)

User's Guide for VS COBOL Compiler (SC23–2178)

3278/79 Emulation

Product Description

3278/79 Emulation (em78) provides an emulator that allows your system to attach to a 3274/3174 control unit and emulate a 3278/79 display in CUT mode. Programs are supplied which allow you to transfer files between the operating system and the host. The emulator's keyboard mapping, color, and field attributes can be customized.

Option Names

em78.obj	3278/79 Emulator (em78)
em78mEn_US.msg	3278/79 Emulator Messages – U.S. English
em78mNl_BE.msg	3278/79 Emulator Messages – Belgian/Dutch
em78mFr_FR.msg	3278/79 Emulator Messages – French
em78mDe_DE.msg	3278/79 Emulator Messages – German
em78mIt_IT.msg	3278/79 Emulator Messages – Italian
em78mEs_ES.msg	3278/79 Emulator Messages – Spanish
em78mSv_SE.msg	3278/79 Emulator Messages – Swedish

Prerequisite Software

None

Software Processes to Stop

Ensure that the em78 emulator is not running. If it is, log off or disconnect from the host and then enter the sequence Control-D Control-D to exit the program.

Special Installation Instructions

After the 3278/79 Emulation package has been installed on your system, you must configure it for the language you wish to use. Run the following command to configure the emulator:
emconfig

Disk Space Required (in Megabytes (MB))

3278/79 Emulation	1.9
Messages/Help Text	0.1 per language

Special Hardware Required

To run em78, you will need a 3270 Connection Adapter.

Suggested Reading

None

3270 Host Connection Program

Product Description

3270 Host Connection Program (HCON) provides the ability to emulate a terminal or printer attached to a System/370 computer over any of the following connections:

DFT non-SNA	(terminal or LU1/LU3 printer)
DFT SNA	(terminal only)
HIA	(terminal only)
TCP/IP	(terminal only)
SNA Services	(terminal or LU1/LU3 printer)

Multiple emulator sessions can be run concurrently, on either HFT or ASCII terminals. HCON provides programs to transfer files between the operating system and the host. An Application Programming Interface allows user programs to control the emulator's presentation space. The Autolog feature allows for automatic logging in and logging off to the host system. A menu-driven utility program is provided to let you change the keyboard, color, and field attribute mappings, transfer files, or use the Autolog programs.

Option Names

hcon.obj	3270 Host Connection Program (HCON)
hconmEn_US.msg	3270 Host Connection Program Messages – U.S. English
hconmNI_BE.msg	3270 Host Connection Program Messages – Belgian/Dutch
hconmFr_FR.msg	3270 Host Connection Program Messages – French
hconmDe_DE.msg	3270 Host Connection Program Messages – German
hconmIt_IT.msg	3270 Host Connection Program Messages – Italian
hconmJp_JP.msg	3270 Host Connection Program Messages – Japanese
hconmEs_ES.msg	3270 Host Connection Program Messages – Spanish
hconmSv_SE.msg	3270 Host Connection Program Messages – Swedish

Prerequisite Software

None

Software Processes to Stop

Ensure that no HCON emulator sessions are running. If any emulator sessions are running, exit each session by doing the following:

- Log off or disconnect from the host.
- Enter the key sequence Ctrl-d twice.

Special Installation Instructions

If you are installing the 3270 Host Connection Program in a client/server environment using the **instclient** command, you will need to ensure that the **HCON** daemon is running on any client on which you want to run **HCON**. This is done after installation either by rebooting the client machines or by invoking the following commands on each client:

If **HCON** was previously installed on the client, make sure the old daemon is stopped by entering the following command:

```
stopsrc -cs hcon
```

Start the daemon by entering the following command:

```
startsrc -s hcon
```

If you are not installing HCON in a client/server environment, the installation process will start the daemon for you.

After the 3270 Host Connection Program has been installed on your system, you must add the names of the users and their session profiles to the database. This is required before you can run the HCON emulator. To add users and create session profiles, type the following command:

```
smit hcon
```

The menus for adding and removing users are under the heading HCON Administrator Functions. The menus for creating session profiles are under the heading HCON User Functions.

If HCON will be connected to the host using the SNA Services product, `sna.sna.obj` must be installed and configured *prior* to running HCON. `sna.sna.obj` is *not* required for DFT non-SNA, DFT SNA, HIA, or TCP/IP connections.

If HCON will be connected to the host using TCP/IP, `bosnet.tcpip.obj` must be installed before running HCON. `bosnet.tcpip.obj` is *not* required for DFT non-SNA, DFT SNA, HIA, or SNA Services connections.

Disk Space Required (in Megabytes (MB))

3270 Host Connection Program	4.1
Messages/Help Text	0.3 per language

Special Hardware Required

For DFT connections, you will need a 3270 Connection Adapter.

For HIA connections, you will need a System/370 Host Interface Adapter (HIA).

For SNA Services connections, see the SNA Services section of this chapter for the list of required hardware.

Suggested Reading

None

InfoCrafter

Product Description

InfoCrafter allows users to develop and compile hypertext databases in a form suitable for search and display using InfoExplorer hypertext retrieval system. Databases may be compiled from customized source documents created with Interleaf 5 or from ASCII documents marked up with a customized tag set.

Option Names

icraft.obj The executables and necessary supporting data files.
icraftmEn_US.msg System messages in U.S. English

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
icraft.obj	infoxl.obj Extended License Information Package must be installed on the system on which you intend to view your database.

Software Processes to Stop

None

Special Installation Instructions

After installing InfoCrafter, copy the C shell or Bourne shell setup script (the **setup.csh** or **setup.sh** files, respectively) from the **/usr/lpp/icraft/bin** directory to a directory in which you have write permission. As long as these files are in the **/usr/lpp/icraft/bin** directory, you cannot modify them for future use.

Disk Space Required (in Megabytes (MB))

InfoCrafter	2.2
Messages/Help Text	0.1

Special Hardware Required

The following hardware is required for InfoCrafter:

- POWERStation or POWERServer
- At least 8MB of internal memory.

Note: Although InfoCrafter only requires 8MB for installation, you may need additional memory to create source documents using Interleaf 5. Performance may also be affected by total system memory and the amount of fixed-disk storage available.

Suggested Reading

None

NetWare

Product Description

NetWare provides the functionality of Novell's NetWare on the system, enabling users to integrate the system into existing NetWare computer networks. This means that DOS, OS/2, Windows and Macintosh NetWare clients can access applications-enhancing interoperability and sharing of data.

Option Names

netware.fs.obj	Netware DOS filesystem
netware.server.obj	Netware Server Programs

Prerequisite Software

Software Processes to Stop

All NetWare processes must be inactive.

Warning: Be sure that all user activity has ceased before stopping process.

To stop all NetWare processes, type the following:

```
/usr/lpp/netware/bin/stopnw
```

and press Enter.

Then type the following:

```
/usr/lpp/netware/bin/stopnps
```

and press Enter.

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

None

Suggested Readings

NetWare for v3.11 NetWare Concepts

NetWare for v3.11 Installation

NetWare for v3.11 System Administration

NetWare for v3.11 Utilities Reference

NetWare for v3.11 Troubleshooting and System Messages

NetWare for v3.11 User Basics for DOS Workstations

NetWare for v3.11 Print Server

NetWare for v3.11 Macintosh Installation and Maintenance

PC Simulator

Product Description

PC Simulator runs many Personal Computer DOS (Version 3.30 or 4.0) application programs without modification on the system. The PC Simulator can run one or more DOS programs concurrently in multiple windows and on multiple displays. The simulator can work at the console and at non-console terminals. Multiple simulator sessions can access common files.

Option Names

pcsim.obj	PC Simulator
pcsimmEn_US.msg	PC Simulator Messages – U.S. English
pcsimmNI_BE.msg	PC Simulator Messages – Belgian/Dutch
pcsimmFr_FR.msg	PC Simulator Messages – French
pcsimmDe_DE.msg	PC Simulator Messages – German
pcsimmlt_IT.msg	PC Simulator Messages – Italian
pcsimmNo_NO.msg	PC Simulator Messages – Norwegian
pcsimmEs_ES.msg	PC Simulator Messages – Spanish

Prerequisite Software or Conditions

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
pcsimmEn_US.msg	pcsim.obj PC Simulator

To use PC Simulator in Video Graphics Array mode, AIXwindows must be installed.

You must have a Disk Operating System (DOS) version 3.3 or 4.01 diskette.

Software Processes to Stop

None

Special Installation Instructions

Before PC Simulator can be used on the system, DOS version 3.30 or 4.01 must be installed. The following procedure describes how to install DOS.

1. You have two choices:
 - Create a file with the **touch** command. Insert your DOS system diskette in the diskette drive. Go to step 2.
 - Create a directory with the **mkdir** command. Insert your DOS system diskette in the diskette drive. Go to step 3.
2. Type `pcsim -A 3 -C /path/filename`, where `/path/filename` is the path and file you created with the **touch** command in step 1. Go to step 4.
3. Type `pcsim -A 3 -C /path`, where `path` is the directory you created with the **mkdir** command in step 6.
4. Boot from drive A—the drive containing the DOS diskette.
5. Follow the directions in the DOS manual for installing DOS on a new hard disk.

6. At the DOS A: prompt, type `fdisk` and press Enter. This creates a primary DOS partition on the emulated DOS fixed disk.

Note: You cannot partition a directory.

7. At the DOS A: prompt, type `select C: 001 US` and press Enter. This makes the emulated DOS fixed disk bootable, and copies the DOS system and utilities to the emulated DOS fixed disk.
8. Press the Esc key, then type:

```
pcsim
```

and press enter.

This stops PC Simulator from the DOS prompt.

9. Remove your DOS diskette.
10. To boot DOS from the file or directory that is emulating a DOS fixed disk, specify the file as drive C when you start PC Simulator.

Disk Space Required (in Megabytes (MB))

PC Simulator	3.7
Messages/Help Text	0.1 per language

Special Hardware Required

To use PC Simulator in Video Graphics Array mode, you must have an graphics display and AIXwindows.

Suggested Reading

None

SNA Services

Product Description

SNA Services allows user-provided application programs to communicate with traditional 3270, remote job entry (RJE), and peer applications within a Systems Network Architecture (SNA) network. SNA is a specification that formally defines the functional responsibilities for components of a data communications system and specifies how those components must interact. SNA Services provides an application programming interface to SNA Logical Unit (LU) 0,1, 2, 3, and 6.2 protocols over a Physical Unit (PU) Type 2.1.

Option Names

sna.lu0.obj	The Logical Unit 0 (LU0) option contains the LU0 support provided by SNA Services.
sna.sna.obj	The SNA Services Base contains support for LU types: LU1, LU2, LU3, LU6.2. SNA Services is a set of programs and data files woven into the fabric of the operating system to provide transparent access to the resources of an SNA network.
snamEn_US.msg	The SNA Messages (U.S. English) option contains the messages and help information for SNA Services.
snamNI_BE.msg	SNA Messages – Belgian/Dutch
snamFr_FR.msg	SNA Messages – French
snamJa_JP.msg	SNA Messages – Japanese
snamEs_ES.msg	SNA Messages – Spanish
snamSv_SE.msg	SNA Messages – Swedish

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
sna.lu0.obj	sna.sna.obj	SNA Services Base You must also install the appropriate data link control software from BOEXT2 for your network communications hardware for both sna.lu0 and sna.san.obj. For example, if a Token-Ring card is installed, you must install bosext2.dlctoken.obj software.
snamEn_US.msg	sna.sna.obj	SNA Services Base
sna.sna.obj	bos.obj	AIX Base Operating System

Software Processes to Stop

Warning: Be sure all SNA activity has stopped before stopping the SNA subsystem.

You must stop SNA prior to installing another version of the software or updating the software.

To stop SNA, type the following:

```
stopsrc -cs sna
```

and press Enter.

Special Installation Instructions

CAUTION:

You must export profiles from previous levels of SNA Services before installing Version 3.2. Installation of Version 3.2 may cause the previous version of SNA profiles to be lost. The new SNA Services **exportsna** command can *not* access the pre-Version 3.2 profiles.

Profiles of any *supported* level (Version 3.1.x, where x is any release between 3.1 and 3.2) can be converted by means of an awk script (**/usr/lpp/sna/bin/sna_update.awk**) to be used with Version 3.2. Running this script should not endanger your profiles, even if the changes are not needed.

The fixes included in this script are:

- Inclusion of SNA Security Towers additions
- Correction of SAP Address range problem (04–EC is valid)
- Correction of X.25 range checking (1–127 is valid)
- Changing XID node id from 05C to 071 in control point profiles
- Changing of some names for clarity (attachment_name and local_lu_name.)

Converting profiles is a three step process:

1. Export profiles from Version 3.1.x BOS. To export profiles from Version 3.1.x System, type the following:

```
exportsna -f stet
```

(where *stet* is any filename you choose)

and press Enter.

Save this file onto tape or diskette.

2. Install Version 3.2 BOS.

To install Version 3.2 BOS, refer to the introduction of this manual and select an installation method.

3. Restore exported profiles on Version 3.2 system.

To restore exported profiles on your Version 3.2 system, you will need to restore the exported profiles file, *stet*, to this machine; run the awk script on the file; and import the new file using the **import sna** command.

To run the awk script, type the following:

```
awk -f /usr/lpp/sna/bin/sna_update.awk stet > newprofiles
```

(where *newprofiles* is the profiles file to be imported),

and press Enter.

To import the new file, type the following:

```
importsna -l newprofiles
```

(where *newprofiles* is the profiles file to be imported),

and press Enter.

Note: See the SNA README file for more information.

Disk Space Required (in Megabytes (MB))

SNA Services: LU 1, 2, 3, and 6.2	5.5
SNA Services: LU 0	0.7
Messages/Help Text	0.2 per language

Special Hardware Required

SNA Services requires one or more of the following adapters on the system:

- Token-Ring High-Performance Network Adapter, with appropriate cables to attach to a Token-Ring LAN.
- Ethernet High-Performance LAN Adapter, with appropriate cables to attach to an Ethernet or IEEE 802.3 LAN.
- X.25 Interface Co-Processor/2, with appropriate cables to attach to an X.25 packet switching network.
- 4-Port Multiprotocol Communications Controller and 4-Port Multiprotocol Interface Cable, with appropriate cables to attach to a modem to establish an SDLC connection to a System/370 or a supported peer workstation.

Suggested Reading

None

Network Management

Product Description

Network Management provides facilities for a system to participate in network management activities for both SNA networks and TCP/IP networks.

Option Names

netmgr.am.obj	The Alert Manager option provides the facility to log generic alerts, as defined by the SNA Management Services architecture. The system sends these alerts to the NetView host system as NMVTs through an SNA System Services Control Point-Physical Unit (SSCP-PU) session.
netmgr.api.obj	The SNMP Application Programming Interface option provides a programming interface to aid the user in writing SNMP manager applications.
netmgr.clm.obj	The SNMP Command Line Manager option provides commands for generic SNMP get, next, and set requests.
netmgr.hcf.obj	The Host Command Facility Catcher option provides support for running shell scripts and commands using remote login from a host user through the Host Command Facility.
netmgr.nvdm.obj	The NetView Distribution Manager Catcher option provides support for receiving file or data distributions from a host system as distributed by NetView/Distribution Manager.
netmgr.xgmon.obj	The SNMP Manager option provides X-11 based SNMP manager applications for a TCP/IP network.
netmgrmEn_US.msg	The Network Management I option provides English system messages for the Alert Manager.

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
netmgrmEn_US.msg	netmgr.am.obj	Alert Manager
netmgr.hcf.obj	sna.lu0.obj sna.sna.obj	The System Network Architecture Services (SNA) software product
netmgr.nvdm.obj	sna.lu0.obj sna.sna.obj	The System Network Architecture Services (SNA) software product

Software Processes to Stop

Warning: Be sure all user activity has ceased before stopping processes.

Note: If you are installing onto a machine that will be a diskless server, you must also perform the following procedures on each of the diskless clients *of that server*.

For `netmgr.am.obj`, the `startam` and `rptalert` processes must not be active.

4. To determine if the `startam` process is active, type `ps -e | grep startam` and press Enter.

If the `startam` process is active, you will see a message similar to the following:

```
3093 pts/0 0:01 startam
```

5. To terminate the `startam` process, enter the **stopam** command.
6. To determine if the `rptalert` process is active, type `ps -e | grep rptalert` and press Enter.

If the `rptalert` process is active, you will see a message similar to the following:

```
5081 pts/0 0:00 rptalert
```

7. In this example, 5081 is the pid for `rptalert`. Use the appropriate pid when entering the following to terminate `rptalert`:

```
kill -9 pid
```

For `netmgr.hcf.obj`, the `hcfcd` process must not be active.

8. To determine if the `hcfcd` process is active, type `ps -e | grep hcfcd` and press Enter.

If the `hcfcd` process is active, you will see a message similar to the following:

```
9003 pts/0 0:00 hcfcd
```

9. In this example, 9003 is the pid for `hcfcd`. Use the appropriate pid when entering the following to terminate `hcfcd`:

```
kill -9 pid
```

For `netmgr.nvdm.obj`, the `nvdmrelay` process must not be active.

10. To determine if the `nvdmrelay` process is active, type `ps -e | grep nvdmrelay` and press Enter.

If the `nvdmrelay` process is active, you will see a message similar to the following:

```
4647 pts/0 0:00 nvdmrelay
```

11. In this example, 4647 is the pid for `nvdmrelay`. Use the appropriate pid when entering the following to terminate `nvdmrelay`:

```
kill -9 pid
```

For `netmgr.xgmon.obj`, the `xgmon` process must not be active.

12. To determine if the `xgmon` process is active, type `ps -e | grep xgmon` and press Enter.

If the `xgmon` process is active, you will see a message similar to the following:

```
6163 pts/2 0:00 xgmon
```

13. In this example, 6163 is the pid for `xgmon`. Use the appropriate pid when entering the following to terminate `xgmon`:

```
kill -9 pid
```

14. If you are at the xgmon console, you can type in the xgmon **quit** system command instead of using the **kill -9 pid** method. To use this method to terminate the xgmon process, type `quit` at the xgmon console and press Enter.

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

Alert Manager	1.6
SNMP Application Programming Interface	0.6
SNMP Command Line Manager	0.6
Host Command Facility Catcher	0.1
Netview Distribution Manager Catcher	0.3
Simple Network Management Protocol (SNMP) Manager	1.9
Messages/Help Text	0.1 per language

Special Hardware Required

Hardware requirements for executing the Host Command Facility and the NetView Distribution Manager Catcher:

- For running an LUO session over SDLC:
 - 4-Port Multiprotocol Communications Controller and 4-Port Multiprotocol Interface cable with appropriate cables to attach to a modem
 - Modem
- For running an LUO session over X.25, you need an X.25 Interface Co-Processor 2, with appropriate cables.
- For running an LUO session over Token-Ring, you need a High Performance Network adapter, with appropriate cables.

Hardware requirements for executing the Alert Manager:

- For sending alerts to the NetView host over SDLC:
 - 4-Port Multiprotocol Communications Controller and 4-Port Multiprotocol Interface cable with appropriate cables to attach to a modem
 - Modem
- For sending alerts to the NetView host over Token-Ring, you need a Token-Ring High Performance Network adapter, with appropriate cables.

Suggested Reading

- For netmgr.am.obj: Alert Manager
For configuration information, see the article,
“Alert Manager Overview for Network Management.”
For specific documentation, see the article,
“Alert Manager Overview for Network Management.”
- For netmgr.hcf.obj: Host Command Facility Catcher
For configuration information, see the article,
“Understanding Network and SNA Services Configuration for hcf
Catcher.”
For specific documentation, see the article,
“Host Command Facility Catcher and NetView DM Catcher
Overview for Network Management.”
- For netmgr.nvdm.obj: NetView Distribution Manager Catcher
For configuration information, see the article,
“Understanding Network and SNA Services Configuration for
nvdmrelay Catcher.”
For specific documentation, see the article,
“Host Command Facility Catcher and NetView DM Catcher
Overview for Network Management.”
- For netmgr.xgmon.obj: SNMP Manager
For configuration information, see the article,
“xgmon Overview for Network Management.”
For specific documentation, see the article,
“xgmon Overview for Programmers.”

Computer Graphics Interface Toolkit

Product Description

The Computer Graphics Interface Toolkit is a set of graphics primitives that can be called from various system programming languages and used to create device-independent graphics code. The Computer Graphics Interface Toolkit provides virtual device interfaces and the Computer Graphics Interface (CGI) for application programming.

The Computer Graphics Interface Toolkit provides a migration path for applications developed using the RT System Graphics Development Toolkit.

Option Names

vdi.obj	Computer Graphics Interface Toolkit
vdimEn_US.msg	CGI Toolkit Messages – U.S. English
vdimNI_BE.msg	CGI Toolkit Messages – Belgian/Dutch
vdimFr_FR.msg	CGI Toolkit Messages – French
vdimEs_ES.msg	CGI Toolkit Messages – Spanish

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
vdi.obj	bosext1.vdidd.obj CGI Device Drivers
	bsmXx_XX.msg Base System Messages where Xx_XX is the abbreviation for your primary language.

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

Computer Graphics Interface Toolkit	1.4
Messages/Help Text	0.1

Special Hardware Required

None

Suggested Reading

None

Graphics File Translator

Product Description

Graphics File Translator provides an interactive tool and an Application Programming Interface (API). The tool allows CGM-formatted* files to be viewed, combined, or output to a printer or plotter.

The API provides functions to interpret or to translate the metafile elements of a CGM-formatted* file.

***Note:** The CGM-formatted files must have been generated with the metafile device driver packaged in BOSEXT1 (bosext1.vdidd.obj).

Graphics File Translator supports C, FORTRAN, and Pascal language bindings. GFT output can be directed to AIXwindows, hardcopy devices, or captured as revisable data file images (metafiles).

The translator features the following:

- Support for ANSI CGM X3.122-1986 Standard
- Binary Record Format, Clear Text Record Format, and Character-Encoding Format encoding capabilities

Option Names

vdigft.obj	Graphics File Translator
vdigftmEn_US.msg	Graphics File Translator Messages – U.S. English
vdigftmNI_BE.msg	Graphics File Translator Messages – Belgian/Dutch
vdigftmFr_FR.msg	Graphics File Translator Messages – French
vdigftmEs_ES.msg	Graphics File Translator Messages – Spanish

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
vdigft.obj	bosext1.vdidd.obj CGI Device Drivers
	bsmXx_XX.msg Base System Messages where Xx_XX is the abbreviation for your primary language.

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

Graphics File Translator	3.6
Messages/Help Text	0.1

Special Hardware Required

None

Suggested Reading

None

Graphics Plotting System

Product Description

Graphics Plotting System provides an application programming interface (API) and a flexible structure for the effective construction of business graphics. Graphics Plotting System includes an efficient set of building blocks for chart creation.

Option Names

vdipplot.obj Graphics Plotting System

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)
vdipplot.obj	bosex1.vdidd.obj CGI Device Drivers bsmXx_XX.msg Base System Messages where Xx_XX is the abbreviation for your primary language.

Software Processes to Stop

None

Special Installation Instructions

None

Disk Space Required (in Megabytes (MB))

Graphics Plotting System 3.0

Special Hardware Required

None

Suggested Reading

None

Xstation Manager

Product Description

Xstation Manager supports the attachment of an Xstation to a system on an Ethernet Version 2, IEEE 802.3, or Token-Ring LAN. The Xstation 130 also supports attachment via SLIP (Serial Link Internet Protocol.)

Option Names

x_st_mgr.obj	Xstation support for Xstation 120 and Xstation 130
x_st_mgrmEn_US.msg	System Messages for Xstation Manager – U.S. English
x_st_mgrmNI_BE.msg	System Messages for Xstation Manager – Belgian/Dutch
x_st_mgrmFr_FR.msg	System Messages for Xstation Manager – French
x_st_mgrmDe_DE.msg	System Messages for Xstation Manager – German
x_st_mgrmIt_IT.msg	System Messages for Xstation Manager – Italian
x_st_mgrmNo_NO.msg	System Messages for Xstation Manager – Norwegian
x_st_mgrmEs_ES.msg	System Messages for Xstation Manager – Spanish
x_st_mgrmSv_SE.msg	System Messages for Xstation Manager – Swedish

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
x_st_mgr.obj	bosnet.tcpip.obj	Transmission Control Protocol/ Internet Protocol (TCP/IP)
	X11rte.obj	AIXwindows Run Time Environment
	bos.data	AIX Base Operating System
x_st_mgrmEn_US.msg	x_st_mgr.obj	IBM Xstation support for IBM Xstation 120 and Xstation 130

Software Processes to Stop

Ensure that no one else is using the system and that no user programs are running.

Special Installation Instructions

Note: When installation is complete, be sure you follow the directions to shut down and restart your system. This starts the inetd and Xstation daemons.

Before you install your Xstation, TCP/IP must be configured. See "Chapter 14. Configuring TCP/IP and NFS."

After the Xstation Manager program is installed on your system, you must configure one or more Xstations on your network. Follow the instructions in "Configuring the Xstation".

Disk Space Required (in Megabytes (MB))

Xstation Manager	2.6
Messages/Help Text	0.1 per language

Special Hardware Required

Ethernet or Token-Ring are required in order for the system to communicate with the Xstation.

Suggested Reading

None

XL FORTRAN Compiler

Product Description

The XL FORTRAN Compiler is an application enabler for the system family of products. A program upgrade option is included for migration from the Version 1 XL FORTRAN products to Version 2.

Option Names

xlfcmp.obj	XL FORTRAN Compiler
xlfcmpmEn_US.msg	XL FORTRAN Compiler Messages – U.S. English
xlfcmpmJa_JP.info	XL FORTRAN Compiler Messages – Japanese
xlfcmpiEn_US.info	XL FORTRAN Documentation – U.S. English

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
xlfcmp.obj	xlfrte.obj	XL FORTRAN Run Time Environment
	bosadt.bosadt.obj	Base Application Development Toolkit
	bosadt.lib.obj	Base Development Libraries and Include Files
xlfcmpiEn_US.info	bssiEn_US.info	Base System Standard Information – U.S. English

Software Processes to Stop

Ensure that no programs are compiling or running.

Special Installation Instructions

Installation of this product completely replaces previous versions.

Disk Space Required (in Megabytes (MB))

XL FORTRAN Compiler	8.1
FORTRAN Documentation	4.1
Messages/Help Text	0.3 per language

Special Hardware Required

None

Suggested Reading

Language Reference for XL FORTRAN Compiler (SC09–1353)

User's Guide for XL FORTRAN Compiler (SC09–1354)

XL FORTRAN Run Time Environment

Product Description

Applications developed using the XL FORTRAN Compiler Version 2, Release 2, must be linked with XL FORTRAN Run Time Environment Version 2, Release 2, for execution. The Run Time Environment can be linked using dynamic binding (requiring that the Run Time Environment be available at the time the application is executed.) Alternatively, the Run Time Environment can be statically linked to the application, resulting in a larger object module, but eliminating the need for the Run Time Environment in the execution environment.

A program upgrade option is included for migration from the Version 1 XL FORTRAN products to Version 2.

Option Names

xlfrte.obj	XL FORTRAN Run Time Environment
xlfrtemEn_US.msg	XL FORTRAN Run Time Environment Messages – U.S. English
xlfrtemFr_CF.msg	XL FORTRAN Run Time Environment Messages – Canadian French
xlfrtemFr_FR.msg	XL FORTRAN Run Time Environment Messages – French
xlfrtemJa_JP.msg	XL FORTRAN Run Time Environment Messages – Japanese
xlfrtemSp_SP.msg	XL FORTRAN Run Time Environment Messages – Spanish

Prerequisite Software

None

Software Processes to Stop

Ensure that no programs are compiling or running.

Special Installation Instructions

Installation of this product completely replaces previous versions.

Disk Space Required (in Megabytes (MB))

XL FORTRAN Run Time Environment	1.8
Messages/Help Text	0.1 per language

Special Hardware Required

None

Suggested Reading

Language Reference for XL FORTRAN Compiler (SC09–1353)

User's Guide for XL FORTRAN Compiler (SC09–1354)

XL PASCAL Compiler

Product Description

The XL Pascal Compiler generates optimized object code when the optimization compiler option is specified.

The XL Pascal Compiler provides the following features:

- Meets American National Standard Pascal Computer Programming Language (ANSI/IEEE 770X3.97–1983), ISO 7185–1983(0), and Federal Information Processing Standard publication 109 industry standards
- Source code compatible, with some exceptions, with System/370 VS Pascal
- Support for ANSI/IEEE standard 754-1985 for binary floating-point arithmetic
- Support for inter-language calls
- Support for the dbx symbolic debugging tool
- A library of run-time routines that support input and output operations, string manipulation operations, and other language-specific operations.

Option Names

xlpcmp.obj	XL Pascal Compiler
xlpcmpmEn_US.msg	XL Pascal Compiler Messages – U.S. English
xlpcmpmJa_JP.msg	XL Pascal Compiler Messages – Japanese
xlpcmpiEn_US.info	XL Pascal Compiler Documentation – U.S. English

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
xlpcmp.obj	xlprte.obj	XL Pascal Run Time Environment
xlpcmpiEn_US.info	bssiEn_US.info	Base System Standard Information – U.S. English

Software Processes to Stop

Ensure that no programs are compiling or running.

Special Installation Instructions

Installation of this product completely replaces previous versions.

Disk Space Required (in Megabytes (MB))

XL Pascal Compiler	4.0
Pascal Documentation	3.3
Messages/Help Text	0.2 per language

Special Hardware Required

None

Suggested Reading

User's Guide for XL PASCAL Compiler (SC09-1326)

Language Reference for XLPASCAL Compiler (SC09-1327)

XL Pascal Run Time Environment

Product Description

Applications developed using the XL Pascal Compiler must be linked with XL Pascal Run Time Environment for execution. The Run Time Environment can be linked using dynamic binding (requiring that the Run Time Environment be available at the time the application is executed.) Alternatively, the Run Time Environment can be statically bound to the application, resulting in a larger object module, but eliminating the need for the Run Time Environment in the execution environment.

The XL Pascal Run Time Environment library routines include support for the following types of functions that may be invoked by an XL Pascal Compiler program:

- Text file data transformations between the character form found in text files and the internal data formats
- Data file access and support functions
- String manipulation functions.

Option Names

xlprte.obj	XL Pascal Run Time Environment
xlprtemEn_US.msg	XL Pascal Run Time Environment Messages – U.S. English
xlprtemFr_CF.msg	XL Pascal Run Time Environment Messages – Canadian French
xlprtemFr_FR.msg	XL Pascal Run Time Environment Messages – French
xlprtemJa_JP.msg	XL Pascal Run Time Environment Messages – Japanese
xlprtemSp_SP.msg	XL Pascal Run Time Environment Messages – Spanish

Prerequisite Software

None

Software Processes to Stop

Ensure that no programs are compiling or running.

Special Installation Instructions

Installation of this product completely replaces previous versions.

Disk Space Required (in Megabytes (MB))

XL Pascal Run Time Environment	0.3
Messages/Help Text	0.01per language

Special Hardware Required

None

Suggested Reading

User's Guide for XL PASCAL Compiler (SC09–1326)

Language Reference for XLPASCAL Compiler (SC09–1327)

Ada

Product Description

The Ada Compiler is a production-quality compiler, suitable for either large or small-scale software projects. The function of the Ada Run Time Environment comes with the compiler.

The compiler provides the following features:

- Meets American National Standard Ada ANSI/MIL–STD 1815A–1983, ISO 8652–1987, and Federal Information Processing Standard (FIPS) publication 119 industry standards
- Conformance to the declarations in the package specification of the Proposed Standard for a Generic Package of Elementary Functions in Ada ISO–IEC/JTC1/SC22/WG9 (Ada) Numerics Rapporteur Group, Draft 1.2, dated 8/21/90
- Ada library management tools
- Symbolic debugger with graphics and ASCII interfaces
- Pragma interface to FORTRAN, C, and system Assembler
- AIXwindows (Xlib) interface
- Graphics Library (GL) interface
- Global optimizer
- Set of complementary tools, including code profiler, source dependency analyzer, cross referencer, syntax verifier, source code formatter, and recompilation tools.

Option Names

adacmp.obj	Ada Compiler
adacmp.gl.obj	Ada GL Binding
adacmp.gsl.obj	Ada GSL Binding
adacmp.math.obj	Ada Mathematics Libraries Binding
adacmp.nls.obj	Ada NLS Binding
adacmp.xwd.obj	Ada AIXwindows Binding
adaiEn_US.info	Ada Documentation – U.S. English
adarte.obj	Ada Run Time Environment

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
adacmp.obj	adarte.obj bosadt.bosadt.obj	Ada/6000 Run Time Environment Base Applications Development Toolkit/6000
adacmp.gl.obj	adacmp.obj X11_3d.gl.rte.obj	Ada/6000 Compiler AIXwindows/3D Support
adacmp.gsl.obj	adacmp.obj X11dev.src	Ada/6000 Compiler AIXwindows Development Libraries and Include Files
adacmp.math.obj	adacmp.obj	Ada/6000 Compiler
adacmp.nls.obj	adacmp.obj	Ada/6000 Compiler
adacmp.xwd.obj	adacmp.obj X11rte.obj	Ada/6000 Compiler AIXwindows Run Time Environment
adaiEn_US.info	bssiEn_US.info	Base System Standard Information option of the InfoExplorer Databases

Software Processes to Stop

The following software processes must be stopped prior to installation:

- If installing adaiEn_US.info, stop InfoExplorer
- If installing adacmp.obj, stop all Ada processes
- Any other application programs compiled with Ada compiler or tool must be stopped prior to installing Ada.
- Any Ada compiler processes that access a particular binding must be stopped when installing a new version of that binding.

Special Installation Instructions

Make sure that the setting of your file size parameter allows you to create files up to 10MB in size. Several of the files in this product are quite large. Use the **ulimit** command to change your file size setting.

Disk Space Required (in Megabytes (MB))

Ada (total)	49.6
Ada Documentation	7.8

Special Hardware Required

None

Suggested Reading

Ada User's Guide (SC09-1321)

Ada Support Package Reference (SC09-1395)

Ada Run Time Environment

Product Description

The Ada Run Time Environment contains the necessary Ada components to execute applications developed with the Ada Compiler on another system.

Option Names

adarte.obj

Ada Run Time Environment—contains the component that comes with the compiler.

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
adarte.obj	bos.obj	AIX Base Operating System

Software Processes to Stop

The following software processes must be stopped prior to installation:

- If installing adarte.obj, stop all Ada compiler, tool, and application program processes.
- Any other application programs compiled with Ada must be stopped prior to installing Ada.

Special Installation Instructions

Make sure that the setting of your file size parameter allows you to create files up to 10MB in size. Several of the files in this product are quite large. Use the **ulimit** command if you need to change your file size setting.

Disk Space Required (in Megabytes (MB))

Ada Run Time Environment 1.0

Special Hardware Required

None

Suggested Reading

Ada User's Guide (SC09–1321)

Open Systems Interconnection Messaging and Filing (OSIMF)

Product Description

OSIMF provides electronic mail and file transfer services that support the Open System Interconnection (OSI) standards specified by the International Standards Organization (ISO).

Option Names

osimf.osistk.obj	OSI protocol stack
osimf.ftamc.obj	FTAM client
osimf.ftamsg.obj	FTAM server and FTAM-FTP gateway
osimf.mhs.obj	X.400 Messaging System
osimf.xti.obj	X/Open Transport Interface

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
osimf.ftamc.obj	osimf.osistk.obj	OSI protocol stack
osimf.ftamsg.obj	osimf.osistk.obj bosnet.tcpip.obj	OSI protocol stack TCP/IP Applications
osimf.mhs.obj	osimf.osistk.obj bosext1.mh.obj	OSI protocol stack Mail Handler
osimf.xti.obj	osimf.osistk.obj	OSI protocol stack
802.3 LAN operation	bosext2.dlc8023.obj	IEEE 802.3 DLC
802.5 LAN operation	bosext2.dlctoken.obj	Token-Ring DLC

Software Processes to Stop

Currently running versions of OSIMF must be stopped.

Special Installation Instructions

Do not attempt to start OSIMF, or its individual applications until you have planned for and made the necessary configuration changes for your environment. Information on planning, configuring, loading, starting, and stopping OSIMF is contained in the *Version 3 OSI Messaging and Filing User's and System Administrator's Guide*, (SC32-0012).

Disk Space Required (in Megabytes (MB))

Open Systems Interconnection Messaging and Filing 6.5

Special Hardware Required

If you will be communicating with another system over a network, at least one of the following adapters is required:

- Token-Ring High-Performance Network adapter, with appropriate cables to attach to an Token-Ring LAN.
- Ethernet High-Performance Network adapter, with appropriate cables to attach to an IEEE 802.3 LAN.
- X.25 Interface Co-Processor/2, with appropriate cables to attach to an X.25 packet switching network.

Suggested Reading

Information about TCP/IP, Message Handler, and communication networks can be found in *Version 3 Communication Concepts and Procedures*, (GBOF-1526).

ESSL

Product Description

ESSL (Engineering and Scientific Subroutine Library) is a set of high performance mathematical subroutines. The ESSL library can be used with FORTRAN or C.

Option Names

essl14 Engineering Scientific Subroutine Library

Prerequisite Software

Option you are installing...	Prerequisite Software (install <i>before</i> or <i>with</i> option you are installing)	
essl14	xlf rte.obj	XL FORTRAN Run Time Environment
	xlf cmp.obj	XL FORTRAN Compiler/6000 is required when customizing ESSL
	bosadt.bosadt.obj	Base Application Development Toolkit
	bosadt.lib.obj	Base Development Libraries and Include Files
	bosadt.prof.obj	Base Profiling Support

Software Processes to Stop

None

Special Installation Instructions

ESSL error option table customization can be preformed after installation.
For more information, refer to the *Engineering and Scientific Subroutine Library Installation Guide, Release 4*, (SC23-0183-6).

Disk Space Required (in Megabytes (MB))

Engineering Scientific Subroutine Library

Special Hardware Required

None

Suggested Reading

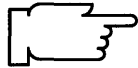
None

Chapter 18. Hardware Basics

This chapter gives basic instructions on how to use your system unit hardware, and how to log in and log off your system.

If you need more detailed information on the system unit, refer to the chapter "Using Your System" in the manual *Getting Started: Using the IBM RISC System/6000*.

If you need information on how to operate peripheral devices such as tape drives, refer to the hardware operations manual that came with those devices.

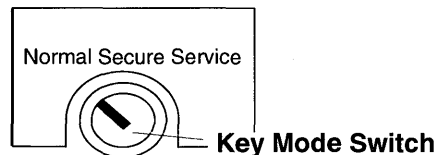


Note: If you have come here from an installation procedure, do *not* at this time perform any of the procedures contained in this section. Simply read this material to gain background information. The installation chapter that you are using will tell you when it is time to actually perform these procedures.

This section contains generic illustrations. The exact appearance of your system may vary slightly from the illustrations.

System Unit Key Switch

System Unit Key Switch

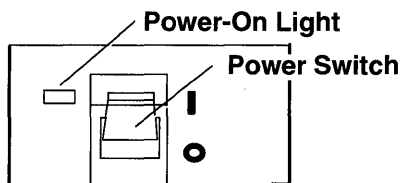


The system unit key switch has three key mode positions: NORMAL, SECURE, and SERVICE. When the key mode switch is set to NORMAL, the normal system functions are available. When the key mode switch is in the SECURE position, the normal system functions are available except that the system cannot be rebooted (restarted). This is to prevent an unauthorized person from trying to bypass the password prompt by booting with diskettes or tape. When the key mode switch is in the SERVICE position, the system can carry out internal diagnostic routines to verify that all system functions are operating properly.

At different points within a procedure, the user will be required to place the key switch in any one of these three positions. The illustration above shows the system unit key switch with the key mode switch in the NORMAL position.

System Unit Power Switch

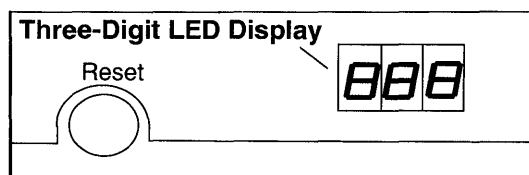
System Unit Power Switch



The "System Unit Power Switch" is a toggle switch with two positions: ON, denoted by "I," and OFF, denoted by "O," on the Power Switch panel. When the switch is set to the ON position, the power-on light will be illuminated. The system will then start a routine power-on self-test (POST) with diagnostic codes being displayed on the three-digit LED display that is described in the next section.

If power does not come on when you set the power switch to ON, ensure that the power cord, located at the back of the system unit, is plugged into a grounded electrical wall outlet and firmly plugged into the system unit. If this does not solve the problem, refer to the *Problem Solving Guide*.

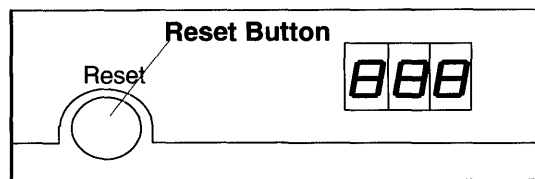
Reading the Three-Digit LED Display



Note: On some types of system units, you may have to open a door to see the three-digit LED display.

The three-digit LED display (usually located near the reset button) is used to indicate the progress of the system unit self-tests and configuration program by means of a three-digit code. (This code may have a lowercase letter in place of a number, in some cases.) This display is also used to display diagnostic program messages (three-digit codes), when the key switch is in SERVICE mode, and to indicate if there has been a serious disruption of the processes of the operating system during normal operational use.

Using the Reset Button

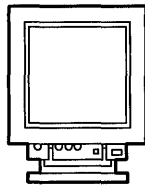


Warning: When the mode switch is in the NORMAL or SERVICE position, pressing the Reset button while the operating system is running can result in damaged or lost data. It is recommend that, when possible, you use the **shutdown** command to do a system shutdown before using the reset button.

- To initiate a reset, the button must be pressed twice in rapid succession.

The Reset button has two purposes. One is to Initial Program Load (IPL) the system, when the mode switch is in Normal or Service position. The other is to initiate the displaying of diagnostic messages, after a flashing 888 has been displayed in the three-digit LED display.

Adjusting the Display Screen



Most displays have a power switch and controls for screen brightness and contrast. On many displays, the power switch and the controls for brightness are located on the front of the display cabinet below the screen. Some display cabinets are equipped with a tilt feature that allows the user to position the display screen at a comfortable viewing angle.

While working at your display, adjust any available controls so that the screen image is sharp and at a comfortable viewing distance and angle.

Logging In

When the system is first shipped or installed, you will have a valid root login name (userid). If you are the system administrator and this is the first time you are logging in, use the login name `root` to complete the installation process, and setup other login names and passwords.

The following prompt on your screen indicates that the system is ready for you to log in:

login:

1. To log in, type your login name after this prompt and press Enter.
2. If the password prompt is displayed, type your password and press Enter. (Your password is not displayed on your screen.)

If you do not know what login name or password has been assigned to you, check with your system administrator.

What happens after you login depends on the state of the system:

Pre-loaded If you have a pre-installed system and you also have AIXwindows installed, the initial login provides the AIXwindows user interface.

BOS If you have installed only the base operating system, you receive the normal Korn shell interface.

In either of the preceding cases, you can now use appropriate commands or utilities, including SMIT for system management. See "Commands Overview" in *Getting Started: Using the IBM RISC System/6000* for information on how to enter commands.

If the login prompt is not displayed on your screen, verify that your system and your display are both turned on and that no one is already logged in at your display.

Logging Off

If you want to log off and leave your display ready for the next user:

1. Save all files you have modified and close all the processes that you have opened.
2. Press the Ctrl-D key sequence, or type `exit` and press Enter. After you log off, the system displays the login prompt.

Note: If you have multiple open windows or virtual terminals, the Ctrl-D key sequence may not close all of your windows and virtual terminals. You can enter `logout` on a command line to completely log off. The **logout** command, however, does not save open files.

Chapter 19. SMIT Basics

This chapter gives a brief overview on how to use the ASCII (non-graphical) version of the System Management Interface Tool (SMIT). SMIT is a menu-based interface that allows you to do system management tasks by using menus instead of typing commands on a command line. If you have the AIXwindows environment installed, the Motif (graphical) version of SMIT is also available. However, since not all users have Motif SMIT on their systems, all of the installation procedures in this Installation Guide use the ASCII version of SMIT. Though the functions are essentially the same in an AIXwindows environment, the screen images presented in that version of SMIT are quite different. For more detailed information regarding using SMIT, go to the section on using SMIT in your *Getting Started: Managing the RISC System/6000*.



Note: If you have come here from an installation procedure, do *not* at this time perform any of the procedures contained in this section. Simply read this material to gain background information. The installation chapter that you are using will tell you when it is time to actually perform these procedures.

Using SMIT in the ASCII Interface

If you are using an ASCII screen, the ASCII version of SMIT is activated by typing `smit` at the system prompt. If you are in AIXwindows, ASCII SMIT is started by typing `smit -C`. The system responds with a SMIT main menu. From this menu, you can select other menus that allow you to perform any number of tasks on your system. Through this selection and input process, the user is able to perform tasks that might otherwise require a large number of commands typed into the system. SMIT also has a fastpath feature. If you want to start at a specific menu instead of at the SMIT main menu, type `smit keyword`, where `keyword` is the name of a menu. For example, if you type `smit mkuser`, you will be taken directly to the Create a User screen.

There are basically three types of screens in SMIT:

- A. Menu screens
- B. Dialog screens
- C. Command status screens.

Menu screens contain lists of the different types of functions that can be performed. You select from the menus the type of task you want to perform. After one or more menu selections, a dialog screen will appear. On the dialog screen there will be a number of selections and/or entry fields that allow you to specify exactly how you want the command to run. When you are done filling in the dialog screen, you press Enter and SMIT begins executing the command you have built. The Command Status screen then appears. This screen shows messages that occur while the command is running and then displays any output from the command.

Menu Screens

When you enter SMIT in ASCII mode, you are presented with the main SMIT menu screen similar to the following:

```

                                System Management
Move cursor to desired item and press Enter.

Installation & Maintenance
Devices
Physical & Logical Storage
Security & Users
Diskless Workstation Management
Communications Applications & Services
Spooler (Print Jobs)
Problem Determination
Performance & Resource Scheduling
System Environments
Processes and Subsystems
Applications
Using SMIT (information only)

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

The first option, `Installation & Maintenance`, is highlighted. To choose an option from a SMIT ASCII menu or submenu, use the cursor keys to highlight the desired option and press the Enter key to select it.

Menu selections that do not execute commands immediately will lead you into submenus or dialog screens. Dialog screens offer text entry fields where the user supplies parameters.

Menu information that does not fit on one screen can be scrolled either by using the Up Arrow, Down Arrow, Home, End, Page Up, or Page Down keys.

Available SMIT functions are listed at the bottom of all SMIT ASCII screens.

When you are in a submenu or dialog that is longer than one screen, the following messages can appear:

[TOP]	Indicates the upper boundary of the text.
[BOTTOM]	Indicates the lower boundary of the text.
[MORE... <i>nn</i>]	Indicates that there are <i>nn</i> more lines hidden off screen. Use your scroll keys to view these lines.

Dialog Screens

In a dialog screen, you supply the required parameters to specify how you want the command to run.

The following is an example of a SMIT ASCII dialog screen:

Install Software With Updates			
Type or select values in entry fields. Press Enter AFTER making all desired changes. [Entry Fields]			
* INPUT device / directory for software	/dev/rmt0.1		+
* SOFTWARE to install	[bosadt.all	>	
Automatically install PREREQUISITE software?	no		+
COMMIT software?	no		+
SAVE replaced files?	yes		+
VERIFY software?	no		+
EXTEND file systems if space needed?	yes		+
REMOVE input file after installation?	no		+
F1 = Help	F2 = Refresh	F3 = Cancel	F4 = List
F5 = Undo	F6 = Command	F7=Edit	F8 = Image
F9 =Shell	F10=Exit	Enter=Do	

When a dialog screen appears, the first editable field name is highlighted and the cursor is waiting in the corresponding text-entry field. Available functions are listed at the bottom of the screen. Symbols appearing to the left of field labels or the right of text-entry fields indicate what kind of information is appropriate. When entries are complete, the Enter key commits your entry to the text-entry field or runs the command you have built.

Understanding Dialog Symbols

The following symbols are used to indicate various types of text entry fields:

<u>SYMBOL</u>	<u>MEANING</u>
[]	Indicates the beginning and end of an editable field.
<	Indicates there is more text to the left of the visible field.
>	Indicates there is more text to the right of the visible field.
+	Indicates either a list of choices or an option ring is available. Press the F4 key to display the entire list of options or use the Tab key to display options individually.
#	Specifies a numeric field.
X	Specifies a hexadecimal field.
/	Indicates that you must enter a file name.
*	Indicates that this field requires a value.
Highlighted entry	Indicates a user-modified entry. A highlighted entry is in reverse video.

Navigating SMIT Dialogs

There are several ways to move through a dialog screen:

<u>METHOD</u>	<u>ACTION</u>
Up Arrow/Down Arrow	Moves between fields.
Tab	Moves to the next choice in a multiple-choice or option-ring list field.
Shift-Tab Key Sequence	Moves to the previous choice in a multiple-choice or option-ring field.
Page Up	Moves up one screen length.
Page Down	Moves down one screen length.
Home	Moves to the top of the list.
End	Moves to the bottom of the list.

Symbols are used to indicate various types of text entry fields. The symbols may be displayed in various places in the dialog.

Function Keys

When you are using SMIT in ASCII, the valid functions for the specific menu or dialog are displayed at the bottom of each dialog screen. The following chart describes all functions in SMIT. If you use a key sequence (*Esc-number*), press the Esc key, quickly followed by the numeric key.

Unless you have remapped your keyboard, the following functions are available:

Function Key	Command	Description
F1 or Esc-1	Help	Gives more information on topic to which the cursor points.
F2 or Esc-2	Refresh	Redraws the screen. Use if console messages overwrite the screen.
F3 or Esc-3	Cancel	Returns to the previous screen.
F4 or Esc-4	List	Presents a list of possible choices for a n entry field. A scrollable pop-up list is displayed.
F5 or Esc-5	Undo	Resets the entry field to the original setting.
F6 or Esc-6	Command	Displays the command that SMIT is building.
F7 or Esc-7	Edit Also: Select	Presents the highlighted text-entry field in a wide, pop-up window for editing. Makes individual selections on multi-select lists.
F8 or Esc-8	Image	Displays the <i>FastPath</i> parameter for the current submenu or dialog screen. Also, saves screen image in the smit.log file where you can print it later.
F9 or Esc-9	Shell	Escapes to a shell. A confirmation pop-up menu or message is displayed.
F10 or Esc-0	Exit	Exits SMIT.
Enter	Do	Executes the command built by SMIT or commits list entries to a dialog.

Note: **Note:** Function Keys and SMIT fast-path commands can be found in the manual *Quick Reference*.

Command Status Screens

The following is an example of a SMIT ASCII command status screen:

```
                COMMAND STATUS

Command: running      stdout: no      stderr: no

Before command completion, additional instructions may appear
below.
```

After you have completed and committed a dialog, SMIT runs the command for you. A command status screen displays the results (output) of most SMIT commands. When SMIT starts executing a command the phrase `Command: running` is displayed at the top of the command status screen. SMIT uses the command status screen to display messages that occur while the command is running. The screen may also prompt you for any additional information it needs to execute the command. After the command is completed, the `Command: OK` message is displayed and the results of the command is shown on the screen. If for some reason the command could not run to completion, a `Command: failed` message will be displayed.

Chapter 20. System Messages

This section lists system messages that may appear during the installation of your Version 3.2 Base Operating System (BOS) and optional software products. The system messages are listed in alphabetical order. Information about each message is organized in the following manner:

System Message	The system message appears 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.

Note: If you believe that your problem is the result of a software defect (a bug), rather than a user error, refer to “Chapter 21. Recovery Procedures” for information on how to report defects.

bosmain: the `./fs.size` file does not exist or contains invalid information. This file contains information about the size and number of file systems to be created.

Explanation: The `.fs.size` file is the first file on any (BOS or mksysb) image. This file contains the information required by the installation process to create the default file systems. Any image not containing a `.fs.size` file as the first file will not install.

System Action: The installation process returns to the Current System Settings menu.

User Action: Select or create another image and try the installation again.

bosmenus: The `/usr/lpp/bosinst/settings` file does not exist or is empty.

A screen similar to the following is displayed:

```

ID# OPTION
 1 Continue
 2 Perform System Maintenance and Then Continue

Enter ID#
```

Explanation: The `/usr/lpp/bosinst/settings` file contains the current install options. Installation cannot proceed without this file. The file is in the following format:

```
primary locale name          C (POSIX)
primary console              /dev/hft0
installation device          /dev/rmt0
destination disks            00-08-00-00 00-00-08-00
boot device                  00-08-00-00
```

System Action: If the `/usr/lpp/bosinst/settings` file does not exist or is empty, the installation process halts. Choosing option 1 results in more error messages.

User Action: You have several options:

- Choose option 1, enter the shell, and attempt to create `/usr/lpp/bosinst/settings` with the correct parameters. Note that the installation environment is very limited; the use of IO redirection (`>`, `>>`) and `echo` is one way to create a file in this limited environment. For example, after entering the shell, type the following commands:

```
echo "C (POSIX)" > /usr/lpp/bosinst/settings
echo "/dev/hft0" >> /usr/lpp/bosinst/settings
echo "/dev/rmt0" >> /usr/lpp/bosinst/settings
echo "00-08-00-00 00-00-08-00" >> /usr/lpp/bosinst/settings
echo "00-08-00-00" >> /usr/lpp/bosinst/settings
exit
```

OR

- Reboot from the same media and attempt the installation again.

OR

- Follow your local problem reporting procedures.

bosset: No hard disks can be accessed

A screen similar to the following is displayed:

```

ID# OPTION
1 Continue
2 Perform System Maintenance and Then Continue
.
.
.
Enter ID#
```

Explanation: No hard disks are configured on the system. Consequently, the installation process cannot begin. Choosing option 1 displays the Main Installation menu, but no installation can take place until the problem is resolved. Choosing option 2 allows you to enter a limited function shell. View the devices that the configuration process located from this shell by typing the following: `cat /etc/objrepos/devs`.

System Action: Installation cannot begin until the problem is resolved.

User Action: You have several options:

- Turn the system off and check the following:
 - 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 the devices are turned on.
 - Check the SCSI cabling and connections.
 - Reboot and attempt the installation again.

OR

- Boot from maintenance disks and run diagnostics.

This command only allows 256 mounted file systems during this process. Please unmount unnecessary file systems before re-trying.

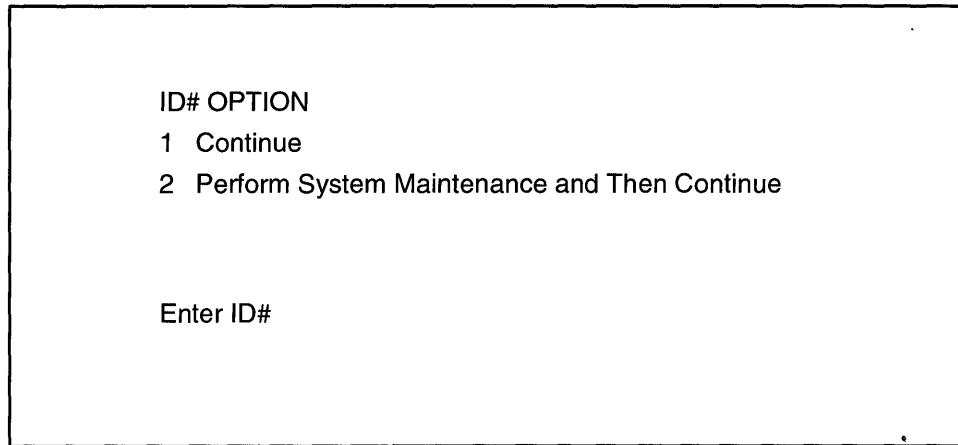
Explanation: During the installation process, the number of file systems mounted on your system reached the maximum limit of 256.

System Action: The installation process stops and this message is displayed.

User Action: Unmount any unnecessary file systems before restarting the installation process.

**chfs was unsuccessful with return code X.
Could not complete network install of all loadable options.
Choose option 1 to continue.**

A screen similar to the following is displayed:



Explanation: During a network install the installation process first loads the Base Operating System (BOS) and then archives all other loadable options in **/usr/sys/inst.images**. This error message results when the system cannot extend the size of the **/usr** file system to accommodate the loadable options.

System Action: The install process is suspended.

User Action: Continue with the installation by choosing option 1 and attempt to load the installable images after system reboot.

Could not position tape device to bos.obj tape mark.

Explanation: The installation of the operating system from a stacked tape (a bootable tape with multiple software images) was unable to position the tape at the location of the Base Operating System (BOS). This position is recorded in the stacked tape table of contents (TOC). The TOC is assumed to be the third image on all stacked tapes.

System Action: The installation process returns to the System Settings menu.

User Action: Ensure that the BOS image on the stacked tape is in the same position as listed in the table of contents. Otherwise, contact your service representative.

Could not position tape device to table of contents tape mark

Explanation: The installation of the operating system from a stacked tape (a bootable tape with multiple software images) failed in its attempt to locate the table of contents (TOC). The TOC records the tape position of the Base Operating System (BOS) and other installable images. Without the TOC, the installation process is unable to locate and install the BOS or other images.

System Action: The installation process has returned to the System Settings menu.

User Action: Recreate your tape with a valid table of contents or contact your service representative.

If you have another system installed, access InfoExplorer for an explanation of how to recreate your tape.

Could not retrieve .fs.size from the network install server. The ./fs.size file does not exist or contains invalid information. This file contains information about the size and number of file systems to be created.

Explanation: The **.fs.size** file is the first file on any BOS or mksysb image. This file contains the information required by the installation process to create the file systems. Any image not containing a **.fs.size** file as the first file will not install.

System Action: The installation process returns to the System Settings menu.

User Action: Select or create another image and try the installation again.

The file systems which will be created will require \$tot_lv_size megabytes. The total amount of space available on the hard disks which you have selected is \$tot_disk_avail megabytes.

Please choose enough hard disk storage from the CURRENT SYSTEM SETTINGS menu. Press Enter to continue...

Explanation: You have more than 8 MB of memory, but you did not select enough hard disk storage space to successfully install the Version 3.2 Base Operating System (BOS).

System Action: The installation stops and the system message is displayed.

User Action: You must select more hard disk storage space from the Current System Settings menu.

1. After the system message is displayed, press Enter. A screen similar to the following is displayed:

```

                                CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing
the installation of the Base Operating System. If these settings are
correct type 0 and then press Enter to begin the installation.
To change a setting, type the number of the setting and then press Enter

                                CURRENT CHOICE
1 LOCALE                               C (POSIX) :
2 INPUT Installation Device             Tape:      /dev/rmt0.1
3 DESTINATION Disks                   00-08-00-01 00-08-00-00
4 STARTUP (Boot) Device                00-08-00-01

99 Return to previous menu
0 Install the Base Operating System with the current settings

Type the number for your selection, then press Enter: 0
```

2. Type 3 and press Enter to select **DESTINATION Disks**. A screen similar to the following is displayed:

```

                                CHANGE DESTINATION HARD DISK(S)

Select the Destination Hard Disk(s). If necessary, more than one hard disk
may
be selected. To cancel a selection, enter the number a second time. Asterisks
(*) denote disks belonging to an existing volume group.
*>>
>
*>>      LOCATION
>  1      00-08-09-99
>  2      01-08-09-99

    99 Return to previous menu
    0  Commit current choice and return to Settings menu

Type the number for your selection, then press Enter: 0
```

3. Type the number for the hard disk(s) to which you want to install your software and press Enter. You can select multiple disks. To cancel a selected hard disk, type the number for that disk and press Enter.
4. When you have finished selecting disks, type 0 and press Enter.
The system returns to the Current System Settings menu. Your changes are displayed in the Current Choice column.
5. Press Enter to continue the installation.

The file systems which will be created will require \$tot_lv_size megabytes. The total amount of space available on the hard disks which you have selected is \$tot_disk_avail megabytes.

Please extend the current root volume group from option 3 of the CURRENT SYSTEM SETTINGS menu. Press enter to continue...

Explanation: You have only 8MB of memory, and you did not select enough hard disk storage space to successfully install the Version 3.2 Base Operating System (BOS).

System Action: The installation stops and the system message is displayed.

User Action: You must extend the current root volume group from the Current System Settings menu.

Warning: When you select a hard disk to extend your root volume group, *all data on that hard disk is destroyed*. Also, if the disk you select is part of another volume group, *all data associated with that volume group is destroyed*.

1. After the system message is displayed, press Enter. A screen *similar* to the following is displayed:

CURRENT SYSTEM SETTINGS

This screen lists the configuration settings that will be used for performing the installation of the base operating system. If these settings are correct type 0 and press Enter to begin the installation.
To change a setting, type the number of the setting and then press Enter

	CURRENT CHOICE
1 LOCALE	C (POSIX) :
2 INPUT Installation Device	Tape: /dev/rmt0.1
3 EXTEND current root VG	00-08-00-01 00-08-00-00

99 Return to previous menu
0 Install the base operating system with the current settings

Type the number for your selection, then press Enter: 0

Depending upon the type of installation you are performing, the choices on this menu may vary.

2. Select **EXTEND current root VG**. The system lists all of the hard disks on your system that are *not* part of the current root volume group. A screen similar to the following is displayed:

EXTEND THE CURRENT ROOT VOLUME GROUP

Select one or more disks to add to the current root volume group.
To cancel a selection, enter the number a second time. Asterisks (*) denote disks belonging to an existing volume group.

*>>	LOCATION
> 1	00-08-09-99
>>>2	01-08-09-99

99 Return to previous menu
0 Commit current choice and return to Settings Menu

Type the number for your selection, then press Enter: 0

3. Type the number for the hard disk you want to add to your root volume group and press Enter. For example to select hard disk 01-08-09-99 as shown in the screen above, type 2 and press Enter.
4. Type 0 and press Enter to continue the installation. A screen similar to the following is displayed:

```

                                FINAL WARNING

Select the number of the desired ac-
tion:   Base Operating System installation will destroy all
        data in usr (/usr), temporary (/tmp), and root (/)
        file systems of the selected root volume group.

        ALL data will also be destroyed on the disks used
        to extend the current root volume group. Furthermore,
        if the disks used to extend the current root volume
        group were members of another volume group then
        the second volume group will also be destroyed.
99      Return to previous menu
0       Continue with installation

Type the number for your selection, then press Enter: 0
```

The installation should complete successfully. If it does not, contact your System Support representative.

<funcname> pid Killed

(where <funcname> is the name of the parent function being executed and pid is the process id of the process being killed.)

Explanation: A process was automatically killed due to software library incompatibilities. This is seen most often when the boot software, the installation software and the software to be installed are not the same version number. For example, you see this message when using an Version 3.1 Boot diskette to install Version 3.2 software.

System Action: Killed messages are displayed until a critical failure suspends the installation process.

User Action: You have several options:

- Locate a set of compatible software.
OR
- If attempting a mkysyb image installation then on the same system from which the mkysyb image was created, make a set of Boot, Display and Install Maintenance diskettes on the appropriate media and try the installation again.
OR
- Follow your local problem reporting procedures.

getbos: Software installation failed.

Option 1 allows you to try the server again, select a different server, or select a different bos.obj.

A screen similar to the following is displayed:

```

ID# OPTION
1 Continue
2 Perform System Maintenance and Then Continue

Enter ID#
```

Explanation: The network transfer of the Base Operating System (BOS) failed. Probable reasons for failure include network failure or a corrupt BOS image.

System Action: The installation process has halted.

User Action: The only recourse available is to choose option 1.

This option displays the Network Settings menu from which the network parameters can be adjusted and a server contacted. Once the server is contacted, the same or a different BOS image can be selected.

Continued failure probably indicates a corrupt BOS image or network problems.

The install process has encountered the following error: blvset failed with return code X.

A screen similar to the following is displayed:

```

ID# OPTION
1 Continue
2 Perform System Maintenance and Then Continue

Enter ID#
```

Explanation: Near the end of the installation process, the **blvset** command is run to save the installation setting to disk. The information saved is used during the next installation to provide the default settings.

System Action: The install process is suspended.

User Action: Choosing option 1 allows the installation process to complete. There are virtually no maintenance options in this situation. Option 1 will not delete any critical data.

The install process has encountered the following error: bosboot failed with return code X.

A screen similar to the following is displayed:

```

ID# OPTION
1 Continue
2 Perform System Maintenance and Then Continue

Enter ID#
```

Explanation: The installation process failed while trying to initialize the boot area on the disk.

System Action: The installation process is suspended.

User Action:

1. Choose option 2.
2. Type the following command: `bosboot -a -d /dev/hdiskX` where *X* is the number of the disk containing the boot logical volume.
 - If the command is successful, type `exit` to continue.
 - If the command failed, call your service representative.

The install process has encountered the following error: chcons failed with return code X.

A screen similar to the following is displayed:

```

ID# OPTION
1 Continue
2 Perform System Maintenance and Then Continue

Enter ID#
```

Explanation: The **chcons** command was run to assign the primary display. The primary display is the display chosen from the installation menus.

System Action: The install process is suspended.

User Action: Choose option 1 to continue. The current console will be the primary console during the next boot.

The install process has encountered the following error: cp /etc/filesystems /tmp/filesystems failed with return code X.

A screen similar to the following is displayed:

```

ID# OPTION
1 Continue
2 Perform System Maintenance and Then Continue

Enter ID#
```

Explanation: The installation process attempts to save a copy of **/etc/filesystems** to be restored as **/etc/filesystems.old** when the installation is complete.

System Action: The install process is suspended

User Action: Choosing option 1 results in the loss of the previous systems **/etc/filesystems**, but does not affect the outcome of the installation.

The install process has encountered the following error: tar failed with return code X.

A screen similar to the following is displayed:

```

ID# OPTION
1 Continue
2 Perform System Maintenance and Then Continue

Enter ID#
```

Explanation: The installation process could not read the tape.

System Action: The installation process is suspended.

User Action: You have several options:

- Check the functionality of the tape drive by reading another tape. If this fails, reboot and try another tape drive.

OR

- Ensure that the installation image is readable by tar.

OR

- Assuming the tape is positioned at the beginning of the image, the following command reads, but does not extract files from the tape: `tar -tvf/dev/rmtX`, where *X* is the tape drive number (for example, `rmt0`). If the above command fails and the tape drive is functioning, reboot and try another tape.

OR

- Follow your local problem reporting procedures.

**The install process has encountered the following error:
tar -xf-b1 ./fs.size failed with return code X.**

Explanation: The installation process could not read installation media during its attempt to retrieve the `./fs.size` file. The `./fs.size` file is the first file on any (BOS or mksysb) image. This file contains the information required by the installation process to create the default file systems. The installation cannot continue.

System Action: The installation process returns to the System Settings menu.

User Action: You have several options:

- Check the functionality of the installation device.

OR

- From another system, ensure that `./fs.size` is the first file on the image. The following command reads the `./fs.size` file from the media if it exists:

```
tar -xf/dev/input_device ./fs.size
```

(where *input_device* is the name of the tape or diskette drive from which you are installing in the form `/dev/fdo` (diskette) `/dev/rmt0` (tape).

OR

- Follow your local problem reporting procedures.

**installp: Unable to expand file system /usr.
Check available disk space. 508 1024-character byte blocks
are required.**

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. Type `odmdelete -q "name=rootvg and attribute=lock" -o CuAt` and press Enter.
3. Type `putlvodm -K getlvodm -v rootvg` and press Enter.
4. Type `smit` and press Enter to attempt to install your optional software products again.

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 table of contents (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 of the Base Operating System (BOS) and other installable images. Without a valid TOC, the installation process cannot locate and install BOS or the other 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 service representative.

If you have another system installed, access Info Explorer for an explanation of how to recreate your tape.

The media contains an image designed for installing a mksysb image.

Explanation: You have chosen `Install the operating system from factory media`, but the media contains an image that is an installable backup (tar format) of a root volume group. This type of image is created with the `smit startup` or `mksysb` commands. Options 1 and 2 on the main installation menu determine the installation type. Consequently the installation media must contain the corresponding image type (mksysb or BOS).

System Action: The install process has returned to the Current System Settings menu.

User Action: You have several options:

- Provide a BOS image and continue with installation.
OR
- Return to the Main Installation menu, select the option to install a mksysb image (option 2), and continue with the installation.
OR
- Follow your local problem reporting procedures.

The media contains an image designed for installing the base operating system.

Explanation: You have chosen `Install the operating system from media that was created with the 'smit startup' or 'mksysb' command`. However, the media you are installing from contains a Base Operating System (BOS) image. A mksysb image is an installable backup (tar format) of a root volume group. This type of image can be created via the `smit startup` command or the `mksysb` command. Options 1 and 2 on the main installation menu determine the installation type. Consequently, the installation media must contain the corresponding image type (mksysb or BOS).

System Action: Installation cannot begin until the problem is resolved.

User Action: You have several options:

- Provide a mksysb image and continue with installation.
OR
- Return to the Main Installation menu, select the option to install the operating system from factory media (option 1), and continue with the installation.
OR
- Follow your local problem reporting procedures.

No disks are available

Explanation: No hard disks are configured on the system. Consequently, the only functioning menu option is the maintenance option. The devices that the configuration process was able to locate are listed in **/etc/objrepos/devs**.

System Action: Installation cannot begin until the problem is resolved.

User Action: You have several options:

- View the devices file from the maintenance shell by typing the following command:

```
cat /etc/objrepos/devs.
```

OR

- Turn the system off and check the following:
 - 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

- Boot from diagnostics diskettes, and check the hard disks.

OR

- Follow your local problem reporting procedures.

No entry for bos.obj in the table of contents

Explanation: The installation of the operating system from a stacked tape (a bootable tape with multiple software images) was unable to locate an entry for a Base Operating System (BOS) image in the tape table of contents (TOC). Without a BOS entry in the TOC, the installation process cannot locate and install the BOS image.

System Action: The installation process returns to the Current System Settings menu.

User Action: Ensure that the BOS image on the stacked tape is in the same position as listed in the table of contents. Otherwise, contact your service representative.

The /usr/lib/nls/ILS file does not exist or is empty

Explanation: The file **/usr/lib/nls/ILS** lists locale configuration data.

System Action: Due to the missing file, the Change Locale menu cannot be accessed.

User Action; Continue with installation, ignoring error messages concerning the lack of locale data. After system installation is complete, reboot the system and use the **installp** command to install the desired locale.

Chapter 21. Recovery Procedures

This chapter contains the following four sections:

Recovering from a Remote /usr Mount Failure page 21-2

This procedure describes how to recover from a remote /usr mount failure. If you need to recover from a remote /usr mount failure, refer to this section.

Accessing a System That Will Not Boot page 21-4

This procedure describes how to access a system that will not boot from the hard disk and how to access a system prompt in order to begin problem determination procedures. If you need to access a system that will not boot from the hard disk, refer to this section.

Cleaning Up After a Failed Optional Software Installation page 21-11

This procedure describes how to clean up after an unsuccessful installation of optional software products using the System Management Interface Tool (SMIT). If you need to clean up after an unsuccessful installation of optional software products, refer to this section.

Reporting Software Defects page 21-15

The procedures in this section explain how to report any software defects that you find in Version 3.2. If you need to report software defects to representatives, refer to this section.

Recovering from a Remote /usr Mount Failure

Use this procedure if you are unable to mount the **/usr** file system from your remote **/usr** server after installing your Version 3.2 base operating system.

Prerequisite Tasks or Conditions

1. Your remote **/usr** client cannot mount the remote **/usr** server's **/usr** file system.
2. Knowledge of the **vi** editor.

Diagnosing the Problem

The minimal **/usr** filesystem which is mounted when the remote **/usr** filesystem is not available contains network utilities and the **vi** editor for use in error recovery. Execute these commands to diagnose your situation:

PROCEDURE

1. To verify that the IP address for the remote **/usr** server is correct in the **/etc/filesystems** file, type the following:

```
grep -p ^/usr: /etc/filesystems
```

and press Enter.

If the server's IP address is incorrect, use the **vi** editor to correct the entry in the **/etc/filesystems** file and reboot the system in order to attempt the remote **/usr** mount again.

If the server's IP address is correct, continue with step 2.

2. To verify that the IP address for the remote **/usr** server is correct in the **/sbin/net.info** file, type the following:

```
cat /sbin/net.info
```

and press Enter.

This is the second field on the single line in this file.

If the address is not correct, use the **vi** editor to correct the entry in the **/sbin/net.info** file and reboot the system in order to attempt the remote **/usr** mount again.

If the server's IP address is correct, continue with step 3.

3. Using the IP address for the remote **/usr** server, verify the network connection with the **ping** command.

For example, if the server's IP address is 197.2.47.47, you would type:

```
ping 197.2.47.47
```

and press Enter.

If the **ping** command cannot reach the server, then try to ping a different machine on the network which you are certain is up and running. If that machine cannot be contacted, then the network connection for the client may be faulty. If you can ping the machine which you know is running, then the network connection for the server may be faulty.

4. If the **ping** command succeeded in contacting the server, then try to mount the remote **/usr** file system.

For example, if the server' IP address is 197.2.47.47, you would type:

```
mount 192.2.47.47:/usr /mnt
```

and press Enter.

If this command fails, then refer to “Chapter 5. BOS Installation for Use with a /usr Server,” section “Preparing and Updating the /usr Server” to correct the condition that prevents the client from mounting the **/usr** file system. After you have corrected the remote **/usr** server's configuration, reboot the client in order to attempt the remote **/usr** mount again.

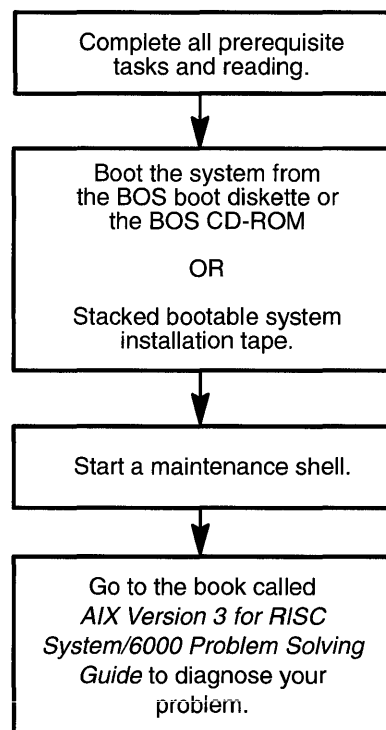
Accessing a System That Will Not Boot

Use this procedure if you are unable to boot from the hard disk after installing your Version 3.2 Base Operating System.

This section describes how to access a system that will not boot from the hard disk. The procedure describes how to get a system prompt so that you can begin problem determination procedures. If the procedures in this section are successful and you receive a system prompt, you should then go to the book called *Version 3 Problem Solving Guide* to diagnose the problem.

Flowchart for Accessing a System That Will Not Boot

This flowchart outlines the procedure for accessing a system that will not boot.

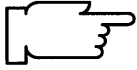


Prerequisite Tasks or Conditions

1. Your system cannot be booted from the hard disk.
2. All hardware is installed.
3. The Version 3.2 Base Operating System (BOS) is installed.
4. Your system unit is off.
5. Locate the key for the key lock on your system unit.

Accessing the System

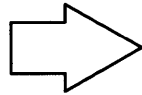
1. Make sure your system unit is off.
2. Turn the system key to the SECURE position.
3. Turn on all attached external devices, such as terminals, CD-ROM drives, tape drives, monitors, and external disk drives.



Note: If you are using an ASCII terminal, make sure that the terminal's line speed (baud rate) = 9600, word length (bits per character) = 8, parity = no (none), and number of stop bits = 1.

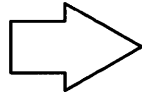
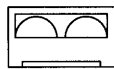
If your terminal is an IBM 3151, 3161, or 3164, press the Ctrl+Setup keys to display the Setup Menu and follow the on-screen instructions to set the attributes. If you are using some other ASCII terminal, refer to the appropriate documentation for information about how to set the attributes.

4. Turn the system unit power switch to the ON position.
5. After several minutes, the 200 code will appear on the three-digit LED display on the system unit.
6. Do one of the following:



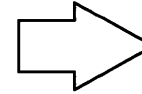
Insert the Version 3.2 CD-ROM into a disc caddy and insert the caddy into your CD-ROM drive.

Note: If a CD-ROM is already inserted in the CD-ROM drive, press the eject button for at least 2 seconds to eject it.



Insert the Version 3.2 tape into your tape drive.

Note: If you push the eject button on an 8mm tape drive, there may be a delay of 1 or 2 minutes before the drive door opens.

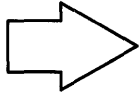


Insert the Version 3.2 Boot diskette into the diskette drive.

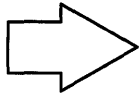
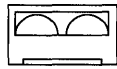
Note: Make sure that the BOS Boot diskette has the same version number as your BOS diskettes.

7. Turn the system key to the SERVICE position.
8. Press the yellow system Reset button twice in quick succession.

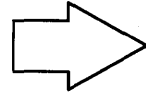
9. Your system will begin booting (starting). A series of codes will immediately appear on the system unit three-digit LED display.



If you are installing from CD-ROM, go to step 12.



If you are installing from tape, go to step 12.



If your system has one of the following display adapters installed, go to step 10. Otherwise, go to step 11.

Note: If you ordered a adapter with your system, the adapter name will be listed on your "About Your Machine" document as one of the following:

- POWER Gt3 Midrange graphics adapter
- POWER Gt4 Midrange graphics adapter
- POWER Gt4x Midrange graphics adapter
- High Speed 3D Graphics Accelerator
- Any other graphics adapter

If your system does *not* have one of the above adapters installed, go to step 11.

10. When c07 appears on the three-digit LED display, continue with step a.

- a. Remove the diskette from the diskette drive and insert the BOS Display Extensions diskette (or insert the non-IBM display diskette if you are using a non-IBM display).
Note: When c07 appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step b.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- c03 indicates the wrong diskette was inserted.
- c05 indicates a diskette error. This copy of the diskette is bad.

- b. When c07 appears the second time, remove the diskette from the drive and insert the BOS Display diskette.

Continue with step 12.

11. When the `c07` code appears on your three-digit LED system display, remove the diskette from the drive and insert the BOS Display diskette.

Note: When `c07` appears, the drive will not stop spinning. It is OK to go ahead and insert the diskette.

Continue with step 12.

Note: If there is a problem with the diskette, one of the following codes may appear on the three-digit LED display:

- `c03` indicates the wrong diskette was inserted.
- `c05` indicates a diskette error. This copy of the diskette is bad.

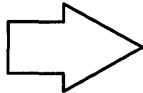
12. The screen may stay blank for several minutes. Then, `c31` will appear on the three-digit LED display. Each terminal and direct-attach display device (or console) attached to your system will show a message asking you to select your system console.



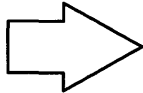
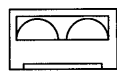
Note: During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right Shift key.

Console refers to the keyboard and display device. The system is asking which console you want to use as the system console. The system console is the one you will use for your system administration tasks.

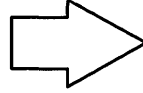
Press the specified keys only on the console that you want to use as your system console.



Go to step 14.



Go to step 14.



Go to step 13.

13. A message similar to the following is displayed:

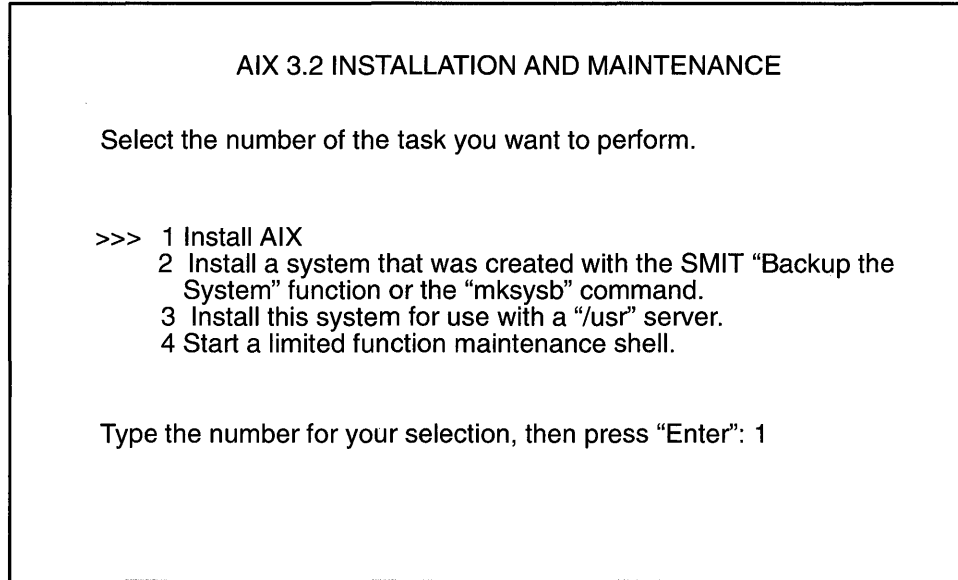
Insert BOS Install/Maint Diskette and Press Enter.

When you see this message, remove the Display diskette, insert the BOS Install/Maintenance diskette, and press Enter.

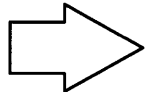
14. A series of messages is displayed. This may take several minutes.

Note: If you are booting from tape, it is normal for the system to move the tape back and forth during this period.

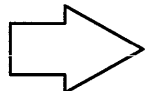
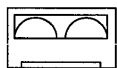
A screen similar to the following is displayed:



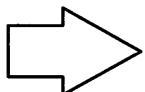
Note: The >>> (arrows) on this menu indicate the default selection. During the installation process, you cannot use any of the keys on the numeric keypad. The installation screens only recognize the number keys located across the top of your keyboard and the Enter or Return key that is located above the right shift key.



Continue with step 15.



Continue with step 15.



Remove the BOS Install/Maintenance diskette from the diskette drive. Then continue with step 15.

15. To select **Start a limited function maintenance shell**, type the following:

4

and press Enter.

A screen similar to the following is displayed:

```

Type 'exit' to return to main menu.

Use the getrootfs command to access the file systems
that reside on the root volume group.
#
```

16. At the system prompt (#), type the following:

```
getrootfs
```

and press Enter.

A screen similar to the following is displayed:

```

Available disks:

PV_NAME  BOOT DEVICE  PVID                VOLUME GROUP ID
hdisk0   YES          000000006d1520c9    000000006d159f6e
hdisk1   NO           000000006d157ab7    000000006d159f6e

#
```


17. To access your disk-resident file system, type the following:

```
getrootfs pv_name
```

(where *pv_name* is a bootable device listed in step 16.)

and press Enter.

18. Go to the book called Version 3 Problem Solving Guide to diagnose your problem.

Cleanup Procedure after a Failed Optional Software Installation

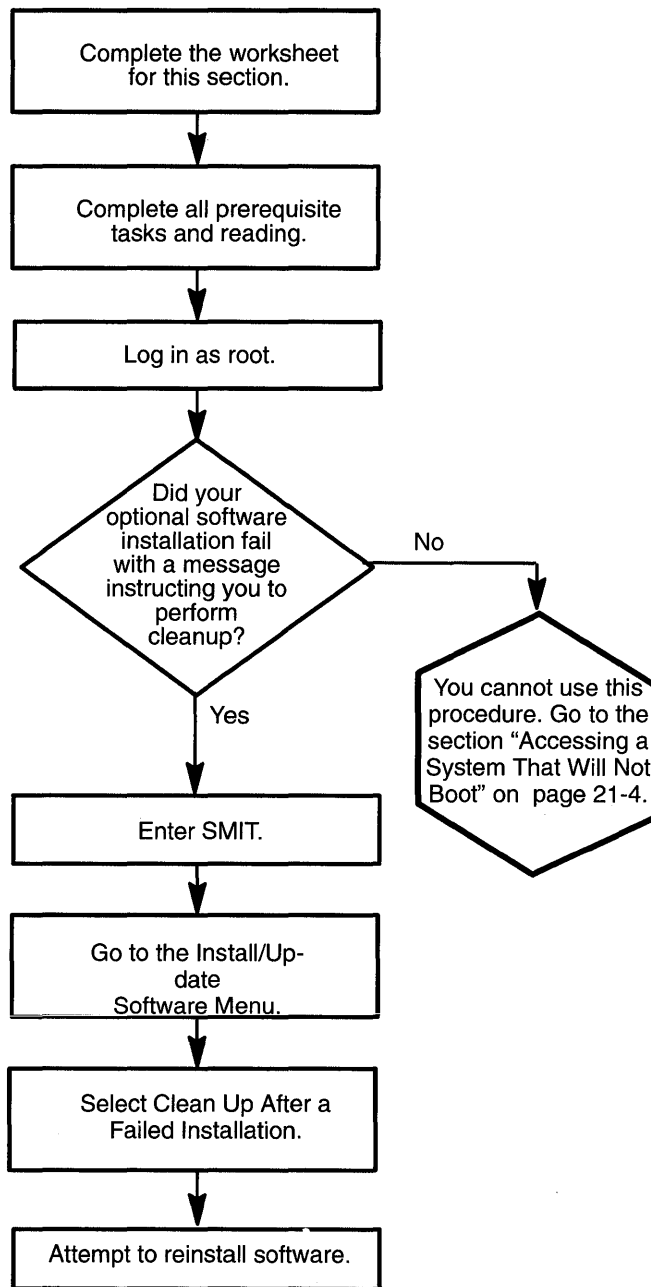
This chapter describes how to clean up after an unsuccessful installation of optional software products using the System Management Interface Tool (SMIT). The cleanup procedure instructs the system to attempt to remove software products that were partially installed. The system also attempts to revert back 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 cleanup procedure is complete, you can attempt to install the software again.

If you used SMIT to install your optional software products, the system automatically performs cleanup when an installation cannot be completed because of failure or interruption. Normally, the only condition under which you may have to use the cleanup procedure described in this chapter is if the system shuts down or loses power during an installation or if the installation process terminates abnormally.

Note: This procedure only applies to the installation of optional software products. If your Version 3.2 Base Operating System installation was unsuccessful, go to page 21-4 of this chapter.

Flowchart for Cleanup Procedure after a Failed Optional Software Installation

This flowchart outlines the cleanup procedure for a failed optional software installation.



Prerequisite Tasks or Conditions

1. All hardware is installed.
2. The Version 3.2 Base Operating System (BOS) is installed.
3. You have a basic knowledge of the System Management Interface Tool (SMIT). For more information, refer to "Chapter 19. SMIT Basics" in this guide.
4. The system instructed you to perform cleanup when you attempted to install optional software.

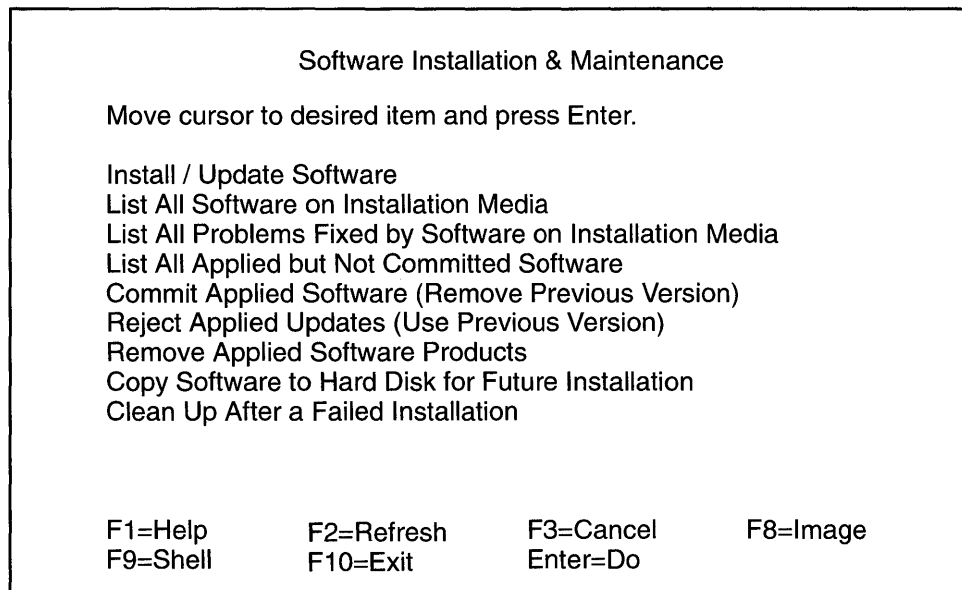
Clean Up Procedure for Failed Optional Software Installations

This procedure describes how to clean up your system after an unsuccessful installation of software other than the Base Operating System.

1. If you are not already logged in as root, log in as root now.
2. Type the following:

```
smit sinstallp      (or type smit -C sinstallp if you are working in windows)
and press Enter.
```

A screen similar to the following is displayed:



3. Move the cursor to `Clean Up After a Failed Installation` and press `Enter`. The system performs the following tasks:
 - Attempts to remove software products that were partially installed.
 - Attempts to revert back to the previous version of any removed 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.

A screen similar to the following is displayed:

```

                                COMMAND STATUS

Command: running      stdout: no      stderr: no

Before command completion, additional instructions may appear below.

F1=Help      F2=Refresh      F3=Cancel      F6=Command
F8=Image     F9=Shell        F10=Exit
```

4. When `Command: OK` is displayed 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, then contact the support center at 1-800-237-5511.

Reporting Software Defects

The procedures in this section explain how to report any software defects that you find in Version 3.2.

A. Introduction

If you encounter a problem that you feel is a defect, you should contact the appropriate support center listed on the "Help Information" page in the front of this manual.

You will be asked for your customer number and the software product name or number. A Problem Management Record (PMR) will be created for you and you will be given a PMR number in the format #####,B###.

A specialist will then work with you to analyze your specific problem.

If your problem is a known problem (rediscovery), a circumvention or Problem Temporary Fix (PTF), if available, will be given to you. If your problem has not been previously reported, the specialist may request that you provide additional details. In some instances, it will be necessary to also have you submit a file that contains information about the configuration of your system. There are two commands that will assist you in compiling this information.

- `"lslpp -hBc > filename`

The output of this command will be used by the specialists at the support center to build the exact operating system and lpp level of your machine.

- `'snap'`

This utility will take a snapshot of your system configuration, allowing quicker problem determination. It will allow you to gather information in specific areas, save the output to a file, and view the output. The `snap -c` command will compress the output into a tar file. The `snap -o` command will download the tar file to removable media. For more information, see the section "C. 'snap' Problem Determination Tool."

If you are asked to provide this additional information, see "B" below.

B. How to Ship Problem Determination Materials

World Trade Customers:

Contact your country's support structure for shipping instructions.

United States Customers:

Austin Support Center Shipping Addresses (Effective January 15, 1992)

Note: All files and media sent should be appropriately labelled with the PMR and branch office number on them, along with the command(s) needed to remove the information from the media.

Standard Mail, mailing address (except FEDERAL EXPRESS and AIRBORNE):

IBM Corp.
11400 Burnet Road
Austin, TX 78758-2900
attn: V3TESTCASE, Dept. W51

FEDERAL EXPRESS and AIRBORNE, mailing addresses:

IBM Corp.
11400 Burnet Road
Building 042
Austin, TX 78758-2900
attn: V3TESTCASE, Dept. W51

FAX number:

(512) 823-7634

VNET, VM userid and nodeid:

V3DEFECT@AUSVM8

Internet/UUNET, electronic address:

mail nsd%aixserv@uunet.UU.NET

UUCP phone number and login:

(512) 823-7652
2400,N,8,1
login: nuucp
passwd: testcase

Austin Support Center: 1-800-237-5511

C. 'snap' Problem Determination Tool

The 'snap' Tool is a command that will assist you in compiling system configuration information quickly and easily. Once this information is compiled, you may view it or compress it for download to diskette or tape or for remote transmission.

You may be asked by support specialists to execute the 'snap' Problem Determination Tool to assist them in accurately identifying your system's problem.

Disk Space Requirements

Approximately 8 megabytes 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 will automatically check 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 filesystem. You may suppress this free space check by using the **-N** option.

Output Directory

The default directory for the output from snap 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 will append to previously created files. See the "Cleanup" section for instructions on cleaning 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.

Main Options

- `snap -g` Gathers the output of `lspp -hBc`, which will be required by support specialists in order to recreate your exact operating system environment, if other problem determination techniques fail. Output is in **/tmp/ibmsupt/general/lspp.hBc**. Also gathers general system information and outputs it to **/tmp/ibmsupt/general/general.snap**.
- `snap -D` Gathers dump and **/unix** (assumes dump device to be **/dev/hd7**).
- `snap -a` Gathers information for all of the groups.
- `snap -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 may 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 testcase demonstrating the problem. The testcase should be copied to the **/tmp/ibmsupt** directory. When the **-c** option of the **'snap'** command is executed, the testcase will be included.
- `snap -o` Creates a tar file and downloads it to removeable media.
- `snap -v` View 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 removeable output device.

For instructions on how to gather information on selected groups (Kernel, Printer, SNA, NFS, TCP/IP, security, async, language, and filesystem), follow the instructions in the next section, "View the Usage Instructions."

View the Usage Instructions

At the system prompt, type the following:

```
snap
```

and press Enter.

Recovery

If you suspect that a command being executed by **'snap'** is hung due to an inaccessible server, execute `<ctrl> c`. You will be prompted to input your choice of desired action:

Enter for no action, return to current operation.

`s` to attempt to kill current operation.

`q` to quit **'snap'** completely.

NOTES

Chapter 22. Notes

Glossary

This section contains definitions of terms used in this Installation Guide.

A

active gateway. A gateway that is treated like a network interface in that it is expected to exchange routing information. If it does not do so for a period of time, the route associated with the gateway is deleted. See *gateway*. Contrast with *passive gateway*.

APAR. Authorized program analysis report. A report of a problem caused by a suspected defect in a current unaltered release of a program.

apply. When you apply a software product to the system, the product is installed and information is saved such that the product may later be removed from the system. The software is marked as being in the applied state. When you install a software product that is already installed, the current version of the product is removed from the system before the installation begins. The new version becomes the currently active version of the software. The active version is the version that will be run when you start running the product. Before you can reinstall a software product, the current version of the product must be in the *committed* state.

When you apply an update, the update is installed and the current version of that software product at the time of the installation is saved in a special save directory on the disk so that you can use the previous version of the software without having to reinstall it. When an update has been applied to a software product, that updated version of the product becomes the currently active version of the software.

Software that has been applied to the system can be 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*. Compare to *commit* and contrast with *reject*.

B

Block size. (1) The number of data elements in a block. (T) (2) A measure of the size of a block, usually specified in units such as records, words, computer words, or characters. (A) (3) Synonymous with block length.

BOOTIMAGE. A boot file created by the **bosboot** command from a Random Access Memory (RAM) disk file system and a kernel. The boot image varies for each type of device booted, and is usually compressed to fit on certain media and to lessen real memory requirements. The complete boot image may also be compressed, which reduces the size of the boot image file.

BOOTP. A part of the Carnegie Mellon code compatible with the X-station AGE enhancements.

BOS Boot diskette. A diskette that contains the boot image needed to start your Base Operating System (BOS) from a diskette. It is one in a series of three diskettes necessary for installing your Base Operating System—Boot, Display, and Install/Maintenance.

C

CD-ROM. High-capacity, read-only memory in the form of an optically read compact disk.

child. (1) Pertaining to a secured resource either a file or library, that uses the user list of a parent resource. A child resource can have only one parent resource. (2) In the operating system, a child is a process, started by a parent process, that shares the resources of the parent process. Contrast with *parent*. (3) In Enhanced X-Windows and AIXwindows, a first-level subwindow. A widget managed by another widget is said to be the child of the managing parent widget. For example, Composite widgets typically manage the Primitive children widgets attached to them. The parent widget typically controls the placement of the child as well as when and how it is mapped.

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. (1) In a distributed file system environment, a system that is dependent on a server to provide it with programs or access to programs. (2) In Enhanced X-Windows, an application program that connects to an Enhanced X-Windows server by an inter-process communication (IPC) path, such as a Transmission Control Protocol (TCP) connection or a shared memory buffer. The program can be referred to as the client of the server, but it is actually the IPC path itself. Programs with multiple paths open to the server are viewed as multiple clients by the protocol. (3) In Enhanced X-Windows, a Toolkit routine that uses a widget in an application or for composing another widget. (4) In AIXwindows, a software application that fills the role of the client in the traditional client-server model upon which Enhanced X-Windows and AIXwindows are based.

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. In SMIT, software can be committed at the time of installation by setting the "COMMIT software?" question to "yes" (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 previous version of the software product.

For v3.1, updates could just be applied but software products were always committed when they were installed. Although v3.2 now allows a version 3.2 software product to be applied without committing it, the rejection of the installation level of the product will 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*.

corrective service update. A temporary solution or by-pass of a problem diagnosed as resulting from a defect in a current unaltered release of the program. Also called a PTF.

configure. To describe to a system the devices, optional features, and program products installed on a system.

Coordinated Universal Time (CUT). The new standard term for worldwide time telling which has the same meaning as Greenwich Mean Time.

D

dependent. A dependent software product is one that requires the specified product or update to be installed *before* it can be installed. In other words, the specified software product is a prerequisite to the dependent product. Contrast with *prerequisite*.

destination disk. The disk to which you are installing.

directory. (1) A type of file containing the names and controlling information for other files or other directories. (2) A table of identifiers and references to the corresponding items of data. (3) An index used by a control program to locate blocks of data that are stored in separate areas of a data set in direct access storage. (4) Contrast with *special file*. (5) A listing of related files arranged in a useful hierarchy.

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.

diskless community. A network of diskless workstations, servers, and clients.

display. A computer output screen on which visual information is displayed.

display device. See *display*.

display diskette. A diskette that contains the information needed to set up display devices—specifically, the TERM variables necessary for the system to recognize your display. It is one in a series of three diskettes necessary for installing your Base Operating System—Boot, Display, and Install/Maintenance.

domain. (1) That part of a network in which the data processing resources are under common control. (2) In a database, all the possible values of an attribute or a data element. (3) In TCP/IP, the naming system used in hierarchical networks. The domain naming system uses the DOMAIN protocol and the named daemon. In a domain system, groups of hosts are administered separately within a tree-structured hierarchy of domains and subdomains.

E

environment. (1) The settings for shell variables and paths 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 (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.

F

file system. The collection of files and file management structures on a physical or logical mass storage device, such as a diskette or minidisk.

full network transfer. The loading of installation images for all of the software you select from the server to the client's hard disk.

full path name. The name of any directory or file expressed as a string of directories and files beginning with the root directory. See *path name* and *relative path name*.

G

gateway. (1) An entity that operates above the link layer and translates, when required, the interface and protocol used by one network into those used by another distinct network. (2) The network that connects hosts. See *active gateway*.

H

hard disk A rigid disk used in a hard disk drive. Synonymous with nonremovable disk.

Note: The term hard disk is also used loosely in the industry for boards and cartridges containing microchips or bubble memory that simulate the operations of a hard disk drive.

hardware. The physical equipment of computing and computer-directed activities. The physical components of a computer system. Contrast with *software*.

high function display device. See *high function terminal (HFT)*.

high function terminal (HFT). A virtual terminal device that, in addition to displays and keyboards, supports locations, valuations, lighted programmable keys, and sound generators.

host. (1) The primary or controlling computer in the communications network. (2) A computer attached to a network.

hostname. The address of a machine in the network.

hypertext. A way of expressing 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. In the graphics interface, the link is displayed in a rectangular box, and in the ASCII interface, it is displayed as underlined text. When you select one of these links, you are taken to a target piece of information that is then displayed.

I

icon. A picture or graphical representation of an object on a display screen to which a user can point with a device such as a mouse in order to select a particular operation or perform a certain action.

input device. The device that is the source of the software you are installing. The input device can be a tape drive, diskette drive, or a directory.

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.

install/maintenance diskette. A diskette that contains a subset of the system commands that are used to install systems and solve system problems. It is one in a series of three diskettes necessary for installing your Base Operating System—Boot, Display, and Install/Maintenance.

Internet (IP) address. The numbering system used in TCP/IP inter-network 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.

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.

L

licensed program. (1) A software program that remains the property of the manufacturer, for which customers pay a license fee. (2) A separately priced program and its associated materials that bear a copyright and are offered to customers under the terms and conditions of a licensing agreement.

locale. A subset of a user's environment that defines conventions for a specified culture, such as time formatting, and character classification, conversion, and collation.

logical volume. 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.

M

monitor. (1) A device that observes and verifies operations of a data processing system. (2) A functional unit that observes and records selected activities for analysis within a data processing system. Possible uses are to show significant departures from the norm or to determine levels of utilization or particular functional units. (3) Synonym for *display*.

mount. To make a file system accessible.

mouse. A hand-held locator that a user operates by moving it on a flat surface. It allows the user to select objects and scroll the display screen by pressing buttons.

N

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 adapter. Circuitry that allows devices to communicate with other devices on the network.

network mask. When a host sends a message to a destination, the system must determine whether the destination is on the same network as the source or if the destination can be reached directly through one of the local interfaces. The system compares the destination address to the host address using a subnet mask. By default, the mask for a Class C address is 255.255.255.0 (ffffff00) which can support a maximum of 254 host addresses. The subnet mask used is 255.255.240.0 (ffff0000) which divides into 14 different subnets and supports a maximum of 14 times 254 host addresses.

NFS. Network File System.

P

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.

partial network transfer. The loading of the Base Operating System (bos.obj), system messages (bsmLanguage), and network communications software (bosnet) installation images from the server to the client's hard disk.

passive gateway. A gateway that does not exchange routing information. Its routing information is contained indefinitely in the routing tables and is included in any routing information that is transmitted. Contrast with *active gateway*.

path name. A file name specifying all directories leading to the file. See *full path name* and *relative 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.

PMP. A preventative maintenance package (PMP) consists of a group of PTFs. A PMP contains all significant PTFs for a given software product since the last release.

PTF. A temporary solution or by-pass of a problem diagnosed as resulting from a defect in a current unaltered release of the program. Also called corrective service update.

preinstalled. Software that is installed by the manufacturer and ready to use.

preloaded. Software that is resident on a hard disk, but must be installed to be used.

prerequisite. A prerequisite software product is one that must be installed *before* the specified product. If you attempt to install software products without the required prerequisite software, a system message displays the names of required prerequisite software. Contrast with *dependent*.

primary 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.

primary language. The primary locale you want your system to use for screen information.

Q

quiescent (1) The process of bringing a device or a system to a halt by rejection of new requests for work. (2) In an ACF/VTAM application program, a way for one node to stop another node from sending synchronous-flow messages.

R

reboot. To reinitialize the execution of a program by repeating the Initial Program Load (IPL) operation.

reject. When you reject an applied software product, the software product's files are removed from the system and the Software Vital Product Data (SWVPD) information is changed to indicate that the product has been removed from the system. System configuration information for the product is also cleaned up, but this is dependent on the product and may not always be complete. If a previous version, release, or level of the product was installed on the system, the system will not resume using the previous version. Contrast with *apply* and *commit*.

relative path name. The name of a directory or file expressed as a sequence of directories followed by a file name, beginning from the current directory. Relative path names do not begin with a / (slash) but are relative to the current directory.

root volume group. The set of hard disks containing the root portion of the Base Operating System file tree.

S

server. (1) An application program that usually runs in the background (daemon) and is controlled by the System Program Controller. (2) On a network, the computer that contains the data or provides the facilities to be accessed by other computers on the network. (3) A program that handles protocol, queueing, routing, and other tasks necessary for data transfer between devices in a computer system. (4) In Enhanced X-Windows, provides the basic windowing mechanism. It handles IPC connections from clients, de-multiplexes graphics requests onto screens, and multiplexes input back to clients.

server daemons. Daemons are processes that run continuously in the background and perform functions required by the processes. Server daemons accept connections from the clients and provide services to requested clients. Client is a simple process which connects to a server process. Several examples of server daemons are ftpd, snmpd, and rlogind.

Shared Product Object Tree (SPOT). A Shared Product Object Tree is a file system that contains software that is to be shared among systems.

software. Programs, procedures, rules, and any associated documentation pertaining to the operation of a system. Contrast with *hardware*.

software product option. An installable unit of a software product. Since some software products are very large, they are divided into many separately installable options. Software product options are separately installable units that can operate independently from other options of that product. Some software product options can also be accessed independently from other options.

source. (1) A system, a program within a system, or a device that makes a request to a target. Contrast with *target*. (2) In advanced program-to-program communications, the system or program that starts jobs on another system.

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*. See *block file* and *character special file*.

startup (boot) device. The device that assigns the hard disk within the root volume group that will contain the startup (boot) image.

subnet address mask. A bit mask used by a local system to determine whether a destination is on the same network as the source or if the destination can be reached directly through one of the local interfaces.

subnet mask. See Network Mask.

subsystem. (1) A secondary or subordinate system, usually capable of operating independently or synchronously with a controlling system. (2) The part of communications that handles the requirements of the remote system, isolating most system-dependent considerations from the application program.

superclient. A client that has read-write permissions on a Shared Product Object Tree (SPOT) which enables it to install optional software products.

T

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*.

TCP/IP. Transmission Control Protocol/Internet Protocol. A communications subsystem that allows you to set up local area and wide area networks.

TERM variable. The system name for the display device that you are using.

U

upgrade. Software that fixes a defect in a previously released software product.

Index

Symbols

- /usr server parameters
 - plan, 16-11
 - worksheet, 16-12
- /usr server, BOS installation for use with
 - advanced path, 5-58
 - complete overwrite installation, defined, 5-1
 - flow chart of, 5-3
 - introduction to, 5-1
 - new installation, defined, 5-1
 - prerequisites of, 5-4
 - preservation installation, defined, 5-1
 - procedure overview, 5-6
 - procedure, steps in
 - /etc/filesystems file, restoring for preservation installation, 5-51
 - /usr file system, making remotely available, 5-7
 - /usr server, preparing and updating, 5-7
 - ASCII terminal, setting up, 5-44
 - booting (starting) the client system, 5-12
 - BOS README file, reading, 5-46
 - completion tasks, 5-51
 - date and time, setting, 5-47
 - destination disk, specifying for new or complete overwrite installation, 5-22
 - destination root volume group, specifying for preservation installation, 5-32
 - display device, setting up, 5-42
 - host list, updating, 5-8
 - input installation device, specifying for new or complete overwrite installation, 5-19
 - input installation device, specifying for preservation installation, 5-29
 - installation plan, completing, 5-12
 - installing root and boot portions of BOS, 5-36
 - language locale, specifying for new or complete overwrite installation, 5-17
 - language locale, specifying for preservation installation, 5-27
 - network interface, specifying for new or complete overwrite installation, 5-24
 - network interface, specifying for preservation installation, 5-33
 - non-root volume groups, importing for complete overwrite installation, 5-52
 - server client access list, updating, 5-9

- /usr server, BOS installation for use with (*cont.*)
 - procedure, steps in (*cont.*)
 - startup (boot) disk, specifying for new or complete overwrite installation, 5-23
 - system settings, changing for new or complete overwrite installation, 5-17
 - system settings, changing for preservation installation, 5-27

Numbers

- 3270 Host Connection Program, product description of, 17-44
- 3278/79 Emulation, product description of, 17-43

A

- about this book, vii
- Ada Compiler, product description of, 17-67
- Ada Run Time Environment, product description of, 17-69
- AIXwindows Environment, product description of, 17-32
- AIXwindows Interface Composer, product description of, 17-38
- apply installation or update, defined, 6-22

B

- backup image. *See* system backup.
- Base Application Development Toolkit, product description of, 17-12
- Base Operating System Network Facilities (BOSNET), product description of, 17-19
- Base System Locales, product description of, 17-6
- Base System Messages, product description of, 17-8
- Boot diskette
 - creating, 11-2
 - defined, 11-1
- boot diskettes. *See* BOSboot diskettes.

BOS, product description of, 17-5
BOS installation plan, 16-2
BOSboot diskettes, creating
 introduction to, 11-1
 procedure for, 11-1–11-4
 types of, 11-1
BOEXT1, product description of, 17-14
BOEXT2, product description of, 17-16

C

CD-ROM, InfoExplorer on. *See* InfoExplorer
 CD-ROM
commit installation or update, defined, 6-22
complete overwrite installation, BOS, defined
 for installation from network, 4-1
 for installation from system backup, 3-2
 for installation from tape or diskette, 2-1
 for use with /usr server, 5-1
Computer Graphics Interface Toolkit, product
 description of, 17-57
configuration, of TCP/IP and NFS. *See* network,
 configuration of.

D

Data Encryption Standards Library Routines,
 product description of, 17-26
defects, reporting software. *See* recovery
 procedures, reporting software defects.
dependents, explanation of, 6-27
diskette, BOS installation from
 advanced path, 2-38
 complete overwrite installation, defined, 2-1
 flow chart of, 2-2
 introduction to, 2-1
 new installation, defined, 2-1
 prerequisites of, 2-3
 preservation installation, defined, 2-1
 procedure overview, 2-5
 procedure, steps in
 ASCII terminal, setting up, 2-27
 booting (starting) the system, 2-6
 BOS README file, reading, 2-29
 completion tasks, 2-34
 date and time, setting, 2-30
 destination disk, specifying for new or
 complete overwrite installation, 2-14

diskette, BOS installation from (*cont.*)
 procedure, steps in (*cont.*)
 destination root volume group, specifying
 for preservation installation, 2-19
 display device, setting up, 2-24
 input installation device, specifying for new
 or complete overwrite installation, 2-13
 input installation device, specifying for
 preservation installation, 2-18
 installation plan, completing, 2-6
 installing BOS, 2-20
 language locale, specifying for new or
 complete overwrite installation, 2-11
 language locale, specifying for preservation
 installation, 2-16
 startup (boot) disk, specifying for new or
 complete overwrite installation, 2-15
 system settings, changing for new or
 complete overwrite installation, 2-11
 system settings, changing for preservation
 installation, 2-16

diskless installation
 adding a diskless client plan, 16-22
 adding a diskless client worksheet, 16-23
 creating file systems plan
 for installing the system, 16-18
 for using the server's /usr, 16-20
 creating file systems worksheet
 for installing the system, 16-19
 for using the server's /usr, 16-21

diskless system, installation of
 a diskless server, creating
 diskless client, adding, 10-42
 flow chart of, 10-33
 superclient, configuring, 10-43
 a diskless server, increasing, file systems to
 serve diskless clients, increasing, 10-42
 diskless client, starting for first time
 ASCII terminal, setting up, 10-67
 booting (starting) the system, 10-63
 converting a diskless client into a dataless
 client, 10-74
 date and time, setting, 10-69
 display device, setting up, 10-65
 flow chart of, 10-61
 post startup tasks, 10-72
 prerequisites of, 10-62
 procedure overview, 10-62
 diskless server, creating
 bootpd and tftpd daemons, configuring,
 10-8
 diskless client, adding, 10-27–10-31
 file systems to serve diskless clients,
 creating, 10-15

- diskless system, installation of *(cont.)*
 - diskless server, creating *(cont.)*
 - flow chart of, 10-4
 - plan development, 10-7
 - prerequisites of, 10-6
 - procedure overview, 10-5
 - shared product object tree, creating, 10-19
 - diskless server, increasing, file systems to serve diskless clients, increasing, 10-24
 - non-AIX diskless server, creating
 - optional software, installing, 10-43
 - prerequisites of, 10-35
 - procedure overview, 10-34
 - shared product object tree (SPOT) server, creating, 10-36
 - optional software, installing and updating, 10-44–10-56

- Display diskette
 - creating, 11-2
 - defined, 11-1

- Display Extensions diskette
 - creating, 11-3
 - defined, 11-1

- display screen, adjusting, 18-3

- DOS Server, product description of, 17-28

E

- error messages, 20-1–20-14

- ESSL (Engineering and Scientific Subroutine Library), product description of, 17-72

- Extended License Information Package, product description of, 17-27

F

- flow charts
 - BOS installation
 - for use with /usr server, 5-3
 - from a preloaded system, 1-2
 - from a system backup, 3-3
 - from diskette, 2-2
 - from network, 4-3
 - from tape, 2-2
 - diskless system, installation of
 - a diskless server, creating, 10-33
 - diskless client, starting for first time, 10-61
 - diskless server, creating, 10-4
 - InfoExplorer CD-ROM, accessing, 13-3
 - network installation server, creating, 9-2
 - optional software, installation of, 6-2
 - post-installation procedures, 8-2

- flow charts *(cont.)*
 - README files, viewing, 12-2
 - service updates, installation of, 7-3
 - system backup, creating, 15-3

G

- graphic adapters, list of, 11-1

- graphic aids in guide, explanation of, viii

- Graphics File Translator, product description of, 17-58

- Graphics Plotting System, product description of, 17-59

H

- HANFS (High Availability for Network File Systems), product description of, 17-24

- hardware, description of
 - display screen, 18-3
 - system unit
 - key switch, 18-1
 - LED display, 18-2
 - power switch, 18-2
 - reset button, 18-3

- highlighting in guide, explanation of, viii

I

- images, installation. *See* installation images.

- INed, product description of, 17-11

- InfoCrafter, product description of, 17-46

- InfoExplorer CD-ROM
 - accessing
 - databases, 13-10
 - flow chart of, 13-3
 - for first time, 13-4
 - from hard disk, 13-4
 - deleting files from hard disk, 13-8
 - file system
 - creating, 13-5
 - mounting, 13-7
 - introduction to, 13-1
 - prerequisites of, 13-2

- InfoExplorer Databases, product description of, 17-9

- Install/Maintenance diskette
 - creating, 11-2
 - defined, 11-1

installation

BOS

- for use with /usr server. *See* /usr server, BOS installation for use with.
 - from a network. *See* network, BOS installation from.
 - from a preloaded system. *See* preloaded system, BOS installation from.
 - from diskette. *See* diskette, BOS installation from.
 - from system backup. *See* system backup, BOS installation from.
 - from tape. *See* tape, BOS installation from.
- planning worksheet, completing, 16-2
- dependents, explanation of, 6-27
- diskless system. *See* diskless system, installation of.
- failure of
- cleaning up after, 6-25
 - reinstalling product, 6-25
- optional software. *See* optional software, installation of.
- post-installation procedures. *See* post-installation procedures.
- prerequisites of, explanation, 6-27
- server. *See* network installation server.
- service updates. *See* service updates, installation.

installation images, creating on hard disk, 6-26

installp command, output from, 6-23

introduction to guide

- description of parts, vii
- graphic aids, explanation of, viii
- highlighting, explanation of, viii

inventory, software. *See* See software inventory

L

language locale, changing, 8-3–8-8

language locale, specifying

- for new or complete overwrite installation
 - for use with /usr server, 5-17
 - from network, 4-12
 - from tape or diskette, 2-11
- for preservation installation
 - for use with /usr server, 5-27
 - from a network, 4-19
 - from tape or diskette, 2-16

locale. *See* language locale.

Locales, Base System, product description of, 17-6

logging in and out, 18-4

M

Maintenance diskette. *See* Install/Maintenance diskette.

Menus

AIX 3.2 Installation and Maintenance

- for installation from a system backup, 3-10
- for installation from tape or diskette, 2-9, 21-8

for use with /usr server, 5-15

Change /usr Server Network Device

- for new or complete overwrite installation for use with /usr server, 5-24
- for preservation installation for use with /usr server, 5-33

Change Destination Hard Disks

- for installation from a system backup, 3-16
- for new or complete overwrite installation for use with /usr server, 5-22
- for new or complete overwrite installation from a network, 4-17
- for new or complete overwrite installation from tape or diskette, 2-14

Change Destination Root Volume Group

- for preservation installation for use with /usr server, 5-32
- for preservation installation from a network, 4-24
- for preservation installation from tape or diskette, 2-19

Change Input Installation Device

- for installation from a system backup, 3-13
- for new or complete overwrite installation for use with /usr server, 5-19
- for new or complete overwrite installation from a network, 4-14
- for new or complete overwrite installation from tape or diskette, 2-13
- for preservation installation for use with /usr server, 5-29
- for preservation installation from a network, 4-21
- for preservation installation from tape or diskette, 2-18

Change Locale

- for new or complete overwrite installation for use with /usr server, 5-18
- for new or complete overwrite installation from a network, 4-13
- for new or complete overwrite installation from tape or diskette, 2-11
- for preservation installation for use with /usr server, 5-28
- for preservation installation from a network, 4-20

Menus (*continued*)

- Change Locale (*continued*)
 - for preservation installation from tape or diskette, 2-16
- Change Startup Disk
 - for installation from a system backup, 3-17
 - for new or complete overwrite installation for use with /usr server, 5-23
 - for new or complete overwrite installation from a network, 4-18
 - for new or complete overwrite installation from tape or diskette, 2-15
- Current System Setting, for use with /usr server, 5-17
- Current System Settings
 - for installation from a system backup, 3-12
 - for new or complete overwrite installation from a network, 4-12
 - for new or complete overwrite installation from tape or diskette, 2-11
 - for preservation installation for use with a /usr server, 5-27
 - for preservation installation from a network, 4-19
 - for preservation installation from tape or diskette, 2-16
- Enter Network Parameters
 - for new or complete overwrite installation for use with /usr server, 5-20, 5-25
 - for preservation installation for use with /usr server, 5-30, 5-34
- Method of Install
 - for installation from a network, 4-11
 - for installation from tape or diskette, 2-10
 - for use with /usr server, 5-16
- Minimum Configuration & Startup
 - for installation from a network, 4-36
 - for installation from a system backup, 3-32
- Network Install Addresses
 - for new or complete overwrite installation from a network, 4-15
 - for preservation installation from a network, 4-22
- Network Install File Selection
 - for installation from a network, 4-26
 - for installation from a system backup, 3-19
 - for use with /usr server, 5-38
- Network Parameters, for installation from a system backup, 3-14
- Software Installation & Maintenance, for updating software, 7-11
- System Environments
 - for installation from a network, 4-42
 - for installation from a preloaded system, 1-14
 - for installation from a system backup, 3-28

Menus (*continued*)

- System Environments (*cont.*)
 - for installation from tape or diskette, 2-31
 - for use with /usr server, 5-48
 - System Startup Menu
 - for installation from a network, 4-41
 - for installation from a preloaded system, 1-13
 - for installation from a system backup, 3-27
 - for installation from tape or diskette, 2-30
 - for installation of optional software, 6-9
 - for use with /usr server, 5-47
 - Version 3.2 Installation and Maintenance, for installation from a network, 4-10
- messages, system and error, 20-1–20-14

N

- NetWare, product description of, 17-47
- network installation server, creating
 - advanced path, 9-38
 - flow chart of, 9-2
 - introduction to, 9-1
 - prerequisites of, 9-3
 - procedure overview, 9-4
 - procedure, steps in
 - BOS installation image, creating from CD-ROM, 9-24
 - BOS installation image, creating from diskettes, 9-25
 - BOS installation image, creating from tape, 9-22
 - BOS installation server, creating, 9-5
 - choices file, creating, 9-34
 - inetd subsystem, configuring, 9-9
 - installation images file system, creating, 9-15
 - installation images, creating, 9-20
 - netinst user, creating, 9-7
 - optional software images, creating from CD-ROM, 9-26
 - optional software images, creating from tape, 9-26
 - optional software images, creating on diskettes, 9-30
 - optional software images, protecting, 9-33
 - remote use, making images available for, 9-35
 - server's maximum processes limit, increasing, 9-5
 - service update images, creating from CD-ROM, 9-26

- network installation server, creating (*cont.*)
 - procedure, steps in (*cont.*)
 - service update images, creating from tape, 9-26
 - service update images, creating on diskettes, 9-30
 - service update images, protecting, 9-33
 - system installation image, creating with SMIT mkysyb, 9-20
- Network Management, product description of, 17-53
- network parameters
 - plan, 16-9
 - worksheet, 16-10
- network, BOS installation from
 - advanced path, 4-49
 - complete overwrite installation, defined, 4-1
 - flow chart of, 4-3
 - introduction to, 4-1
 - new installation, defined, 4-1
 - prerequisites of, 4-4
 - preservation installation, defined, 4-1
 - procedure overview, 4-6
 - procedure, steps in
 - /etc/filesystems file, restoring for preservation installation, 4-45
 - ASCII terminal, setting up, 4-32
 - booting (starting) the system, 4-7
 - BOS README file, reading, 4-34
 - completion tasks, 4-45
 - date and time, setting, 4-41
 - destination disk, specifying for new or complete overwrite installation, 4-17
 - destination root volume group, specifying for preservation installation, 4-24
 - display device, setting up, 4-30
 - host list, updating, 4-37
 - input installation device, specifying for new or complete overwrite installation, 4-14
 - input installation device, specifying for preservation installation, 4-21
 - installation plan, completing, 4-7
 - installing BOS, 4-25
 - language locale, specifying for new or complete overwrite installation, 4-12
 - language locale, specifying for preservation installation, 4-19
 - network facilities, installing, 4-35
 - NFS installation images file system, mounting, 4-38
 - non-root volume groups, importing for complete overwrite installation, 4-46
 - optional software installation, preparations for, 4-35
 - SNA configuration, restoring, 4-47

- network, BOS installation from (*cont.*)
 - procedure, steps in (*cont.*)
 - startup (boot) disk, specifying for new or complete overwrite installation, 4-18
 - system settings, changing for new or complete overwrite installation, 4-12
 - system settings, changing for preservation installation, 4-19
 - TCP/IP, configuring, 4-35
- network, configuration of
 - hosts list, updating, 14-6
 - NFS (Network File System), configuring, 14-10
 - remote file system
 - exporting directory within file system, 14-13
 - mounting NFS file system, 14-15
 - TCP/IP (Transmission Control Protocol/Internet Protocol), configuring, 14-2
- new installation, BOS, defined
 - for installation from network, 4-1
 - for installation from system backup, 3-2
 - for installation from tape or diskette, 2-1
 - for use with /usr server, 5-1
- new or complete overwrite installation
 - plan, 16-6
 - worksheet, 16-8
- NFS (Network File System), configuration of. *See* network, configuration of.
- NFS client configuration
 - plan, 16-16
 - worksheet, 16-17

O

- Open Systems Interconnection Messaging and Filing (OSIMF), product description of, 17-70
- optional software
 - See also* software.
 - option names, explanation of, 17-2
 - table of, 17-3
- optional software, installation of
 - advanced path, 6-34
 - concepts, defined
 - apply, 6-22
 - commit, 6-22
 - reject, 6-22
 - default settings, 6-16
 - error messages, explanation of, 6-23
 - flow chart of, 6-2
 - installp command, output from, 6-23
 - introduction to, 6-1
 - packaging, explanation of, 6-20

- optional software, installation of (*cont.*)
 - plan, completing, 16-24
 - prerequisites of, 6-3
 - procedure overview, 6-4
 - procedure, steps in
 - installation, 6-8
 - network, preparing for installation over, 6-4
 - remote /usr client, installing on, 6-6
 - starting point, determining, 6-4
 - product identification, 6-21
 - worksheet, completing, 16-25
- optional software, overview of, failure of
 - installation, cleaning up after, 21-11
- optional software, product description of
 - 3270 Host Connection Program, 17-44
 - 3278/79 Emulation, 17-43
 - Ada Compiler, 17-67
 - Ada Run Time Environment, 17-69
 - AIXwindows Environment, 17-32
 - AIXwindows Interface Composer, 17-38
 - Base Application Development Toolkit, 17-12
 - Base Operating System (BOS), 17-5
 - Base Operating System Network Facilities (BOSNET), 17-19
 - Base System Locales, 17-6
 - Base System Messages, 17-8
 - BOSEXT1, 17-14
 - BOSEXT2, 17-16
 - Computer Graphics Interface Toolkit, 17-57
 - Data Encryption Standards Library Routines, 17-26
 - DOS Server, 17-28
 - ESSL (Engineering and Scientific Subroutine Library), 17-72
 - Extended License Information Package, 17-27
 - Graphics File Translator, 17-58
 - Graphics Plotting System, 17-59
 - HANFS (High Availability for Network File Systems), 17-24
 - INed, 17-11
 - InfoCrafter, 17-46
 - InfoExplorer Databases, 17-9
 - NetWare, 17-47
 - Network Management, 17-53
 - Open Systems Interconnection Messaging and Filing (OSIMF), 17-70
 - PC Simulator, 17-48
 - SNA Services, 17-50
 - Text Formatting Services, 17-22
 - VS COBOL Compiler, 17-41
 - VS COBOL Run Time Environment, 17-42
 - XL C Compiler, 17-29
 - XL FORTRAN Compiler, 17-62
 - XL FORTRAN Run Time Environment, 17-63

- optional software, product description of (*cont.*)
 - XL PASCAL Compiler, 17-64
 - XL PASCAL Run Time Environment, 17-66
 - Xstation Manager, 17-60

P

- packaging, optional software products, 6-20
- parts of guide, description of, vii
- password, changing root's, 8-4–8-8
- PC Simulator, product description of, 17-48
- post-installation procedures
 - flow chart of, 8-2
 - introduction to, 8-1
 - procedure, steps in
 - InfoExplorer, accessing, 8-3
 - network communications, configuring system for, 8-4
 - non-IBM software, installing, 8-3
 - optional software, configuring, 8-4
 - README files, reading, 8-4
 - system backup, making, 8-4
 - Upgrade Utilities, complete procedures in, 8-3
- preinstalled software, defined, 1-1
- preloaded software, defined, 1-1
- preloaded system, BOS installation from
 - AIXwindows, considerations, 1-12
 - flow chart of, 1-2
 - introduction to, 1-1
 - prerequisites of, 1-3
 - procedure overview, 1-3
 - procedure, steps in
 - ASCII terminal, setting up, 1-7
 - booting (starting) the system, 1-4
 - BOS README file, reading, 1-9
 - BOSboot diskettes, creating, 1-10
 - date and time, setting, 1-13
 - display device, setting up, 1-5
 - installing preloaded optional software, 1-17
- prerequisites, explanation of, 6-27
- preservation installation
 - plan, 16-3
 - worksheet, 16-5
- preservation installation, BOS, defined
 - for installation from network, 4-1
 - for installation from tape or diskette, 2-1
 - for use with /usr server, 5-1

preventive maintenance package, defined, 7-1
product identification, optional software, 6-21

R

README files, viewing
 flow chart of, 12-2
 introduction to, 12-1
 prerequisites of, 12-3
 procedure for, 12-3

recovery procedures
 accessing a system that will not boot
 flow chart of, 21-4
 introduction to, 21-2, 21-4
 prerequisites of, 21-2, 21-4
 steps to, 21-2, 21-5
 cleaning up after failed optional software
 installation
 flow chart of, 21-12
 introduction to, 21-11
 prerequisites of, 21-13
 steps to, 21-13
 reporting software defects
 introduction to, 21-15
 problem determination materials, shipping,
 21-15
 snap command, using to determine
 problem, 21-16

reject installation or update, defined, 6-22

root, changing password for, 8-4–8-8

S

selective fix, defined, 7-1

server, network installation. *See* network server
 installation.

service updates, installation of
 default settings, 7-18
 flow chart of, 7-3
 introduction to
 preventive maintenance package, defined,
 7-1
 selective fix, defined, 7-1
 update documentation, 7-1
 update labels, 7-2
 update packaging, 7-1
 update, defined, 7-1
 prerequisites of, 7-4
 procedure overview, 7-5
 procedure, steps in
 network, preparing to install over, 7-6

service updates, installation of (*cont.*)
 procedure, steps in (*cont.*)
 remote /usr client, updating software on,
 7-8
 starting point, determining, 7-5
 updating software, 7-10

SMIT (System Management Interface Tool), ASCII
 interface
 command status screen, 19-6
 dialog screens, 19-3
 function keys, 19-4
 introduction to, 19-1
 menu screens, 19-2

SNA Services, product description of, 17-50

snap command, using to determine problem, 21-16

software
 inventory, description of, 6-29
 optional. *See* optional software.
 preinstalled, defined, 1-1
 preloaded, defined, 1-1
 updates
 overview of, 6-26
 superseded, discussion of, 6-28
 vital product data, description of, 6-29

software defects, reporting. *See* recovery
 procedures, reporting software defects.

source system, defined, 3-1

starting point, determining, 0-1–0-3

system, preloaded
 defined, 1-1
 starting. *See* preloaded system, starting.

system backup, BOS installation from
 advanced path, 3-35
 complete overwrite installation, defined, 3-2
 flow chart of, 3-3
 introduction to, 3-1
 new installation, defined, 3-2
 prerequisites of, 3-4
 procedure overview, 3-6
 procedure, steps in
 ASCII terminal, setting up, 3-24
 booting (starting) the system, 3-7
 BOS README file, reading, 3-26
 date and time, setting, 3-27
 destination disk, specifying, 3-15
 display device, setting up, 3-22
 input installation device, specifying, 3-12
 installation plan, completing, 3-7
 installing BOS, 3-18
 network software, reconfiguring, 3-31
 startup (boot) disk, specifying, 3-17

- system backup, BOS installation from (*cont.*)
 - procedure, steps in (*cont.*)
 - system settings, changing, 3-12
 - TCP/IP, reconfiguring, 3-31
 - root volume group, defined, 3-1
 - source system, defined, 3-1
 - target system, defined, 3-1
- system backup, creating
 - flow chart of, 15-3
 - overview of, 15-1–15-10
 - procedure for, 15-4
- system messages, 20-1–20-14
- system unit. *See* hardware, description of.

T

- tape, BOS installation from
 - advanced path, 2-38
 - complete overwrite installation, defined, 2-1
 - flow chart of, 2-2
 - introduction to, 2-1
 - new installation, defined, 2-1
 - prerequisites of, 2-3
 - preservation installation, defined, 2-1
 - procedure overview, 2-5
 - procedure, steps in
 - /etc/filesystems file, restoring for
 - preservation installation, 2-34
 - ASCII terminal, setting up, 2-27
 - booting (starting) the system, 2-6
 - BOS README file, reading, 2-29
 - completion tasks, 2-34
 - date and time, setting, 2-30
 - destination disk, specifying for new or
 - complete overwrite installation, 2-14
 - destination root volume group, specifying
 - for preservation installation, 2-19
 - display device, setting up, 2-24
 - input installation device, specifying for new
 - or complete overwrite installation, 2-13
 - input installation device, specifying for
 - preservation installation, 2-18
 - installation plan, completing, 2-6
 - installing BOS, 2-20
 - language locale, specifying for new or
 - complete overwrite installation, 2-11
 - language locale, specifying for preservation
 - installation, 2-16
 - non-root volume groups, restoring for
 - complete overwrite installation, 2-35
 - SNA configuration, restoring, 2-36
 - startup (boot) disk, specifying for new or
 - complete overwrite installation, 2-15

- tape, BOS installation from (*cont.*)
 - procedure, steps in (*cont.*)
 - system settings, changing for new or
 - complete overwrite installation, 2-11
 - system settings, changing for preservation
 - installation, 2-16
- target system, defined, 3-1
- TCP/IP (Transmission Control Protocol/Internet Protocol), configuration of. *See* network, configuration of.
- TCP/IP configuration
 - plan, 16-13
 - worksheet, 16-14
- Text Formatting Services, product description of, 17-22

U

- updates, service. *See* service updates.
- updates, software. *See* software updates.
- updating the host list, worksheet, 16-15
- usr server. *See* /usr server.

V

- vital product data, software, 6-29
- VS COBOL Compiler, product description of, 17-41
- VS COBOL Run Time Environment, product description of, 17-42

W

- worksheets, planning
 - /usr server parameters
 - plan, 16-11
 - worksheet, 16-12
 - BOS installation plan, 16-2
 - diskless installation
 - adding a diskless client plan, 16-22
 - adding a diskless client worksheet, 16-23
 - creating file systems plan, for installing the
 - system, 16-18
 - creating file systems plan, for using the
 - server's /usr, 16-20
 - creating file systems worksheet, for
 - installing the system, 16-19
 - creating file systems worksheet, for using
 - the server's /usr, 16-21

worksheets, planning (*cont.*)
network parameters
 plan, 16-9
 worksheet, 16-10
new or complete overwrite installation
 plan, 16-6
 worksheet, 16-8
NFS client configuration
 plan, 16-16
 worksheet, 16-17
optional software installation
 plan, 16-24
 worksheet, 16-25
preservation installation
 plan, 16-3
 worksheet, 16-5
TCP/IP configuration
 plan, 16-13

TCP/IP configuration (*cont.*)
 worksheet, 16-14
 updating the host list, worksheet, 16-15

X

XL C Compiler, product description of, 17-29
XL FORTRAN Compiler, product description of,
 17-62
XL FORTRAN Run Time Environment, product
 description of, 17-63
XL PASCAL Compiler, product description of,
 17-64
XL PASCAL Run Time Environment, product
 description of, 17-66
Xstation Manager, product description of, 17-60

Reader's Comment Form

IBM AIX Version 3.2 for RISC System/6000 Installation Guide

SC23-2341-05

Please use this form only to identify publication errors or to request changes in publications. Your comments assist us in improving our publications. Direct any requests for additional publications, technical questions about IBM systems, changes in IBM programming support, and so on, to your IBM representative or to your IBM-approved remarketer. You may use this form to communicate your comments about this publication, its organization, or subject matter, with the understanding that IBM may use or distribute whatever information you supply in any way it believes appropriate without incurring any obligation to you.

- If your comment does not need a reply (for example, pointing out a typing error), check this box and do not include your name and address below. If your comment is applicable, we will include it in the next revision of the manual.
- If you would like a reply, check this box. Be sure to print your name and address below.

Page	Comments

Please contact your IBM representative or your IBM-approved remarketer to request additional publications.

Please print

Date _____

Your Name _____

Company Name _____

Mailing Address _____

Phone No. () _____
Area Code

Tape

Please Do Not Staple

Tape

Fold

Fold



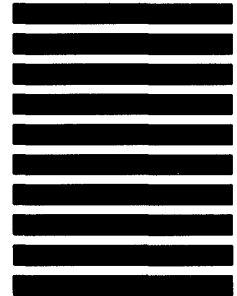
NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 40 ARMONK, NEW YORK

POSTAGE WILL BE PAID BY ADDRESSEE

International Business Machines Corporation
Department 997, Internal Zip 9630
11400 Burnet Rd.
Austin, Texas 78758-3493



Cut or Fold Along Line

Fold

Fold

Tape

Please Do Not Staple

Tape

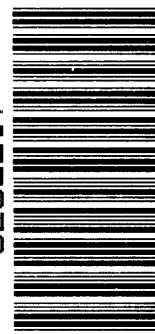


International Business Machines
Corporation
11400 Burnet Road
Austin, Texas 78758-3493
SC23-2341-05 © Copyright IBM Corp. 1990, 1992

Printed In U.S.A.



5262217



SC23-2341-05

