Where To Go?

Use the table below to find the information for which you are looking. For an overview of the entire system, refer to the *Fault Tolerant Systems Architecture Overview*.

	Title	Description
Installation Tasks	*Operating System Installation Guide*	instructions for installing the operating system
	Hardware Installation Guide	setting up the hardware components of the system
	Making and Using Backups	making and installing from installable backups of the operating system
	Operating System Installation Troubleshooting	basic troubleshooting procedures for dealing with operating system installation problems
	*System Integration Guide**	integrating the FX Series system into an existing telecom system
System Administration Tasks	*Managing System Storage*	information and procedures for managing system storage
	Configuring and Maintaining the System	information for understanding and performing tasks that are integral to administering an AIX system
	Administering Your Fault Tolerant System	information for understanding and performing tasks that are integral to administering an FX Series fault tolerant system
Developer's Tasks	*Writing a Fault Tolerant Device Driver**	writing a device driver that has been hardened to tolerate faults
	*Application Developer's Guide to the Configuration Management System**	using interfaces to the Configuration Management System (CMS)
Troubleshooting Tasks	*Diagnosing and Troubleshooting Your Fault Tolerant System**	advanced diagnostic techniques
	Operating System Installation Troubleshooting	basic troubleshooting procedures for dealing with operating system installation problems

You can order these publications from your sales representative or from your point of sale. Refer to the *Documentation Overview* to obtain more information on related publications.

*Contact your Motorola Computer Group Sales office or Motorola Computer Group's customer support group for information on the availability of these publications.

FX Series
AIX Version 4.1

Operating System Installation Troubleshooting

AFXTRBA/IS1

Contents

List of Tables

First Edition (January 1997)

This edition of *Operating System Installation Troubleshooting* booklet applies to AIX 4.1 and to all subsequent releases of this products until otherwise indicated in new releases or technical newsletters.

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Introduction 1

Purpose

The *Operating System Installation Troubleshooting* booklet provides information on issues related to the installation and configuration of your system. If you receive unexpected results after completing the BOS installation or installing a new device, you should consult this booklet for possible solutions.

Scope

Operating System Installation Troubleshooting describes:

- how to resolve installation issues
- how to resolve configuration issues
- how to act on system and error messages

Prerequisites

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

Overview of Contents

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

This chapter...	Provides...
Chapter 2, "Installation Issues"	information on typical installation problems and tips for solving them
Chapter 3, "Configuration Issues"	information on how to diagnose and correct boot and configuration problems
Chapter 4, "Acting on System and Error Messages"	an alphabetical list of messages that can appear during the installation of AIX 4.1 including an explanation of the problem, the system's action, and the user's action

Related Publications

Standard AIX 4.1 Systems

The following publications contain additional information related to *AIX 4.1 as well as FX Series systems:*

- *Operating System Installation*
- *Making and Using Backups*
- *iFOR/LS System Management Guide*
- *System Management Guide: Communications and Networks*
- *Commands Reference (six volumes)*
- *Problem Solving Guide and Reference*
- *General Programming Concepts: Writing and Debugging Programs*
- *Documentation Overview*
- *System User's Guide: Operating System and Devices*
- *System User's Guide: Communications and Networks*
- *Getting Started*
- *Quick Reference*

FX Series Systems

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

- *System Architecture*
- *Administering Your Fault Tolerant System*
- *FX Series Release Notes*
- *Managing System Storage*

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

Getting Help for System Problems

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

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

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

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

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

Problem Reporting

All FX Series problems should be filed through your Motorola customer support center or your Systems Engineer and entered into the MCG TAR (Technical Action Request) system for tracking and follow-up. The table below shows the product ID you should use for filing TARs against various products:

Table 1-1.

Product	Product ID
Operating System Software	AIX414R5
Hardware	GEM/HW
System	GEM/SYS
Factory Build Problems	GEM1.0
FXBug firmware	EHN1.2
AIX SCSI device driver	MOSH1.0
Mechanical Problems	GEM/MECH

Installation Issues 2

This chapter provides information on typical installation problems and tips for solving them. Refer to Chapter 4, "Acting on System and Error Messages," and to the *Messages Guide and Reference*, for information about error messages that appear during an installation.

This chapter includes:

Troubleshooting an Installation from a System Backup

This section describes solutions for common problems when installing from a system backup image.

The section discusses the following topics:

- source and target incompatibilities
- suggestions for reported problems

Source and Target Differences

Consider the differences in the source and target systems when planning an installation from a backup.

The original system image used to make your backup might not match your present configuration. For example, if you changed devices after backing up your system, the original source image does not have the correct device drivers for the target system. Avoid system inequalities such as different communication adapters, tty attributes, and printer attributes.

The same suggestion applies when using a backup image to install additional systems. First configure the source system with the drivers required for the target, then create the backup.

Note If you have an FX Series system, the first boot after a `New and Complete` installation causes all modules in the chassis to be brought online. After this initial boot, FX Series system boots do not do this.

Booting from the CD-ROM to Install the Backup

If you are unable to boot the system with your backup tape, you can use the installation CD-ROM to boot the system. After the system boots from the CD-ROM, you can install the backup image from the tape.

Setting ASCII Terminal Options

If you have an ASCII terminal, set the ASCII terminal communications and keyboard options as shown below:

Table 2-1. ASCII Terminal Communications Options

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

Table 2-2. ASCII Terminal Keyboard Options

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

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

Determining the State of Your System

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

- "The System Is Turned Off" on page 2-4
- "The System Is Up and Running AIX" on page 2-6

The System Is Turned Off

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

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

4. Proceed according to the version of your firmware:

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

5. Insert the installation medium into the appropriate device drive. Remove any other tapes, CD-ROMs, or floppy disks from all attached devices because they may interfere with the autoboot sequence.
6. Power cycle the system by turning it off and turning it on again.
7. The system begins to boot from the installation medium.
8. Go on to "Identifying System Console and Installation Language" on page 2-7.

The System Is Up and Running AIX

If your system is running AIX, follow these steps:

1. Log in as `root`.
2. Insert the installation medium into the appropriate device drive. Remove any other tapes, CD-ROMs, or floppy disks from all attached devices because they may interfere with the autoboot sequence.
3. Reboot the system by entering:
4. `shutdown -Fr`
5. The system begins to boot from the installation medium.
6. Go on to "Identifying System Console and Installation Language" on page 2-7.

Identifying System Console and Installation Language

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

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

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

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

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

Type the number of your choice and press Enter.

1 Start Install Now with Default Settings

2 Change/Show Installation Settings and Install

3 Start Maintenance Mode for System Recovery

88 Help?

99 Previous Menu

Choice:[1]
```

Installing from the Backup

1. Type `3` and confirm to select the `Start Maintenance Mode for System Recovery` option.

   The `Maintenance` screen is displayed.

2. Type `4` and confirm to select the `Install from a System Backup` option.

   The `Choose Tape Drive` screen is displayed.

3. Specify the location of the tape drive that contains the backup tape.

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

The Welcome to the Base Operating System Installation and Maintenance screen is displayed again.

5. Type 2 and confirm to select the Change/Show Installation Settings and Install option.

   The System Backup Installation and Settings screen appears:

```
                    System Backup Installation and Settings

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

       Setting:                                Current Choice(s)

    1  Disk(s) Where You Want to Install.........hdisk0...
           Use Maps.............................No

    2  Shrink File Systems......................No


>>> 0  Install with the settings listed above.

   88 Help?
   99 Previous Menu

>>> Choice [0]:
```

6. Accept or change the settings:

   - To accept the settings and begin the installation, skip to step 12.
   - To change the settings, continue with step 7.

Note The Use Maps option, although displayed, is not supported during installation from backup. You are not able to change the setting of this option.

7. Enter `1` in the `System Backup Installation and Settings` screen to specify disks where you want to install the backup image. The `Change Disk(s) Where You Want to Install` screen appears (the example shown below is for a standard AIX 4.1 system):

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

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

            Name    Location Code   Size (MB)   VG Status   Bootable    Maps

>>>      1  hdisk0  00-01-0S-0,0    80          rootvg      yes         no
         2  hdisk1  00-01-00-1,0    60          rootvg      yes         no


>>>      0  Continue with choices indicated above

        66  Disks not known to Base Operating System Installation

        88  Help?
        99  Previous Menu

>>>     Choice [0]:
```

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

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

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

  `AA-BB-CC-`*X,E*

- If you have an FX Series system, the format for the location code of a disk on an system is:

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

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

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

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

9. To mirror the root volume group, follow the instructions for the type of system you have:

   - If you do *not* want to mirror the root volume group, go to step 10.

   - If you have a *standard AIX 4.1* system and your backup image was created on a mirrored system, you must also mirror the system on which you are installing. You must select two disks for the installation from the backup. If you are installing on an FX Series system, this does not apply; you can choose to mirror your system again or to only install the backup image on one disk.

     You cannot choose to mirror your system at this point if the backup image did not come from a mirrored system. To mirror the root volume group at a later time, complete your system installation and then refer to the *System Management Guide: Operating System and Devices*.

   - If you have a *FX Series* system, to mirror the root volume group, select one disk in each system domain. If you do not select disks in opposite domains, the root volume group is not mirrored.

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

     – If `BB(B)` is in the range from `f1` to `f8`, then the disk is in Domain 0.

– If BB(B) is in the range from f9 to f16, then the disk is in Domain 1.

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

10. After the self tests have completed, type 0 and confirm when you finish selecting disks.

    The BOS installation returns to the System Backup Installation and Settings screen.

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

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

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

The Installing Base Operating System screen appears, reporting the rate of completion and duration.

Suggestions for Troubleshooting Problems

The following troubleshooting tips apply to problems with installations from a backup image:

- Check that you have sufficient free blocks in the file systems to write temporary files.
- Check that each file system has at least 500 blocks free when the backup image is made. The system needs some work space in each file system when installing from a backup image.
- Check the `/smit.log` file for any errors from SMIT.
- Make sure that your backup image contains an `image.data` file. If you create the backup image through SMIT, it is done automatically. If you run `mksysb` from the command line to create your backup, you must either run the `mkszfile` command first, or use the `-i` flag with the `mksysb` command.

Troubleshooting a Full /usr File System

To free up space in a full `/usr` file system, complete one or more of the following tasks:

- Enter `installp -c all` to commit all updates and free up space in the `/usr` file system.
- Remove software that you do not need.
- Extend the `/usr` file system on a standard AIX system using the procedures described in *System Management Guide: Operating System and Devices*. Extend the `/usr` file system on a FX Series system using the procedures described in *Managing System Storage*.

Using BOS Install Logs

Information saved in the BOS installation log files may help you determine the cause of installation problems. To view the BOS installation log files, follow these steps:

1. Enter:

   `cd /var/adm/ras`

2. View the `bosinstlog`, `BosMenus.log`, and `devinst.log` files in this directory.

Using the snap Problem Determination Tool

The `snap` command assists you in compiling system configuration information quickly and easily. Once this information is compiled, you can view it and compress it for downloading to diskette or tape for remote transmission. You may be asked by support specialists to execute the `snap` command to help them accurately identify your system problem.

Note If you have an FX Series system, you may want to run `fxgather` in addition to `snap`. Refer to the *Diagnosing and Troubleshooting Your Fault Tolerant System* guide for information on `fxgather`.

Disk Space Requirements

Approximately 8 MB of temporary disk space is required when executing all of the `snap` options on an average system. If only one or two options are chosen, the disk space required is substantially less, depending on the option. The program automatically checks for free space in the `/tmp/ibmsupt` directory or the directory specified with the `-d` flag. If there is not enough space, you have to expand the file system. You can suppress this check for free space by using the `-N` option.

Output Directory

The default directory for the output from the `snap` command is `/tmp/ibmsupt`. If you desire to name an optional directory, use the `-d` option with the path of the desired output directory. Each execution of the `snap` command appends to previously created files. See "Troubleshooting a Full /usr File System" on page 2-13.

Note Only root has execute permissions for this command.

Cleanup

The `cleanup -r` option should be used to remove the information saved by the `snap` command and to retrieve disk space.

Options

The main options of the `snap` command are:

`-G` gathers the output of the `lslpp -L` command

Support specialists use the output to recreate your operating system environment if other problem determination techniques fail. The output is stored in `/tmp/ibmsupt/general/lslpp.L`. Also, the `-g` flag gathers general system information and outputs it to `/tmp/ibmsupt/general/general.snap`.

`-D` gathers dump and `/unix` (the primary dump device is used)

`-a` gathers information for all of the groups

`-c` creates a compressed tar image of all files in the `/tmp/ibmsupt` directory tree (or other output directory)

Note Other information that is not gathered by the `snap` command can be copied to the `snap` directory tree before executing the `tar/compress` option.

For example, you may be asked by the support specialist to provide a test case that demonstrates the problem. The test case should be copied to the `/tmp/ibmsupt` directory. When the `-c` option of the `snap` command is executed, the test case is included.

`-o` creates a tar file and downloads it to removable media

`-v` displays the output of the commands executed by the `snap` command

Before executing the `snap -c` or `snap -o` commands, any additional information required by the Support Center should be copied to the `/tmp/ibmsupt/testcase` directory (or an alternate directory).

The `snap -c` and `snap -o` commands are mutually exclusive. Do not execute both during the same problem-determination session. The `snap -c` command should be used to transmit information electronically. The `snap -o` command should be used to transmit information on a removable output device.

To View the Usage Instructions

For instructions on how to gather information on selected groups (kernel, printer, NFS, TCP/IP, security, async, language, and file system), enter the `snap` command, with no options, at the system prompt:

```
snap
```

Recovery

If you think a command started by the `snap` command is suspended due to an inaccessible server, first press Ctrl-`C`. Then enter one of the following commands:

Return	return to current operation (no action)
`s`	attempt to kill current operation
`q`	quit `snap`

Configuration Issues 3

This chapter provides information on how to diagnose and correct boot and configuration problems. This chapter includes:

3

Booting from a Tape or CD-ROM Drive

Once the BOS is installed on your system, the hard disk is the default boot device. If you want to boot the system from a tape or CD-ROM, follow the procedures in this section.

To begin to boot your system from a tape or CD-ROM, follow the steps that pertain to the current state of your system:

- "The System Is Turned Off" on page 3-2
- "The System Is Up and Running AIX" on page 3-4

The System Is Turned Off

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

1. Power on all attached external devices, such as terminals and monitors.
2. Power your system on.

3. Proceed according to the version of your firmware:

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

4. Insert the boot medium into the appropriate device drive. Remove any other tapes, CD-ROMs, or floppy disks from all attached devices because they may interfere with the autoboot sequence.
5. Power cycle the system by turning it off and turning it on again.
6. The system begins to boot from the boot medium.

The System Is Up and Running AIX

If your system is running AIX, follow these steps:

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

Accessing a System That Does Not Boot

Overview

The procedure in this section describes how to access a system that does not boot from the hard disk. This procedure enables you to get a system prompt so that you may attempt to recover data from the system or perform corrective action that enables the system to boot from the hard disk.

These steps summarize the procedure for accessing a system that does not boot:

1. Boot the system from the BOS CD-ROM.
2. Select maintenance options.
3. Recover data or perform corrective action via system prompt.

Notes This procedure is intended only for experienced users who have a knowledge of how to boot or recover data from a system that is unable to boot from the hard disk. Most users should not attempt this but should instead follow local problem-reporting procedures. If you have an FX Series system, you can also refer to the *Diagnosing and Troubleshooting Your Fault Tolerant System* guide.

This procedure is not intended for users who have just completed a `New and Complete Overwrite` installation; the system does not contain data that needs to be recovered. If you cannot boot from the hard disk after a `New and Complete Overwrite` installation, follow local problem-reporting procedures.

Prerequisites

The troubleshooting procedure in this section assumes:

- Your system cannot be booted from the hard disk.
- All hardware is installed.
- AIX 4.1 Base Operating System (BOS) is installed.
- Your system unit is turned off.

To Access the System

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

1. Complete the procedures in the section "Booting from a Tape or CD-ROM Drive" on page 3-2 and continue to step 2 below.
2. If you have an ASCII terminal, set the ASCII terminal communications as shown in Table 2-1 on page 2-3 and Table 2-2 on page 2-3.

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

   The system begins booting from the installation medium. If you have more than one console, each terminal and direct-attach display device (or console) may display a screen that directs you to press a key to identify your system console. If this screen is displayed, press the specified key on the device to be used as the system console. The system

console is the keyboard and display device used for installation and system administration. Press a key on only one console.

3. Enter option 3 on the Welcome to the Base Operating System Installation and Maintenance screen when it is displayed.

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

Type the number of your choice and press Enter.

   1 Start Install Now with Default Settings

   2 Change/Show Installation Settings and Install

   3 Start Maintenance Mode for System Recovery



   88 Help?

   Choice:
```

You can select 88 to display help on this or any subsequent screen. After you select the Maintenance option, the Maintenance screen is displayed:

```
                                Maintenance


Type the number of your choice and press Enter

>>>  1 Access a Root Volume Group

     2 Copy a System Dump to Removable Media (Custom Install)

     3 Access Advanced Maintenance Functions Media

     4 Install from a System Backup


     88 Help?
     99 Previous Menu

>>> Choice [1]:
```

4. Select option 1, Access a Root Volume Group, on the Maintenance screen. The Warning screen is displayed.

5. Read the information displayed on the `Warning` screen. When you are ready to continue, type `0` and confirm The `Access a Root Volume Group` screen is displayed:

```
                    Access a Root Volume Group

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

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

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

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

   4) Volume Group 00002433c8801188a contains these disks:
       hdisk2 670 00-07-00-00


>>> Choice [3]
```

The `Access a Root Volume Group` screen lists all of the volume groups (root and otherwise) on your system.

6. Select the option for the root volume group whose logical volume information you want to display. After you enter your selection, the `Volume Group Information` screen is displayed:

```
                        Volume Group Information

  Volume Group ID 000024339e3f1037 includes the following logical
  volumes:

     hd6       hd5          hd7         hd8         hd4      hd
  hd9var       hd3                   fslv00


Type the number of your choice and press Enter.

   1 Access this Volume Group and start a shell.

   2 Access this Volume Group and start a shell before mounting
     the file systems.


   99 Previous Menu

>>> Choice [99]:
```

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

7. Select one of the options from the `Volume Group Information` screen and confirm. Each option does the following:

   - **Option 1**—To access the volume group and start the shell, type `1` and press Return. Selecting this choice activates and imports the volume group and mounts the file system for this root volume group before providing you with a shell and system prompt.
   - **Option 2**—To access the volume group and start the shell before mounting file systems, type `2` and press Return. Selecting this choice activates and imports the volume group and provides you with a shell and system prompt before mounting the file systems for this root volume group.

   You can select `88` to display help on a subsequent screen.

   Note Take appropriate measures to recover data or take action (such as using the `bosboot` command) to enable the system to boot normally.

To Access an FX Series System When Console Login Does Not Appear

In this case the systems seems to boot normally and even starts daemons (such as `inetd`). However, the console login prompt, as spawned by a `getty`, on the console does not appear. The problem probably is the cable connected to the console. The `getty` expects a carrier before it can open the console port. Check your cable and make sure it matches what is shown in the *Hardware Installation* guide.

Resetting the Firmware Default Settings

If you make changes to the firmware settings and experience system problems, you may want to reset the settings to the defaults.

Resetting Default Options in PPCBug Firmware

Use the procedure in this section to reset the firmware default settings on a system running PPCBug firmware.

1. Reboot the system. When you are prompted to abort the autoboot, press Esc.

   The system displays the firmware menu.

2. To enter the system debugger, enter `3`.

3. At the firmware prompt, enter:

   ```
   env;d
   ```

   The system displays the following message:

   ```
   Update Non-Volatile RAM (Y/N)
   ```

4. To save the default settings type `Y` and confirm. If you enter `N`, the system uses the default settings for this reboot, however they are not be saved.

   The system displays the following message:

   ```
   Reset Local System (CPU) (Y/N)
   ```

5. If you want to reboot the system with the default settings, enter `Y`.

6. If you want to return to the firmware prompt, enter `N`.

Resetting Default Options in PowerPC Open Firmware

Use the procedure in this section to reset the firmware default settings on a system running PowerPC Open Firmware.

1. Reboot the system. When you are prompted to abort the automatic startup, press any key.

   The system displays the firmware menu.

2. At the Main Menu, select the `Administrative Options...` menu option.

   The `Administrative Options...` menu window appears on your screen.

3. Select the `Modify the Configuration Settings...` menu option from the `Administrative Options...` window.

   The `Modify the Configuration Settings...` menu window appears on your screen.

4. Select the `Restore Default Environment Settings` menu option from the `Modify the Configuration Settings...` window.

   The system prompts for confirmation that you want to reset the NVRAM variables.

5. Select `Yes` or type `Y` to confirm that you want to reset the default NVRAM environment variable settings.

   The system resets the firmware environment variables to their default settings.

Resetting Default Options in FX-Bug Firmware

To reset the firmware default settings on a system running FX-Bug firmware:

1. Reboot the system.
2. After the self tests have completed, press the Esc key once when you see this message:

   `NVRAM Boot List about to Begin... Press <ESC> to Bypass, <SPC> to Continue`

   The system displays the `FX-Bug>` firmware prompt.
3. At the `FX-Bug>` firmware prompt, type `env;d` and confirm.

   The system displays the following message:

   `Update Non-Volatile RAM (Y/N)`
4. To save the default settings type `Y` and confirm. If you type `N`, the system uses the default settings for this reboot, however they are not saved.

   The system displays the `FX-Bug>` firmware prompt:
5. Enter the command `ioi` at the `FX-Bug>` firmware prompt.

   Note `ioi` sequentially power cycles each I/O module in the entire system. Executing this command can take several minutes depending on your hardware configuration.

   The system produces a list of devices in a format similar to the following:

```
I/O Inquiry Status:
CLUN DLUN CNTRL-TYPE DADDR DTYPE RM Inquiry-Data

  6   40   IOset       4    $05   Y TOSHIBA CD-ROM XM-3601TA 075
```

6. Find the CLUN and DLUN numbers for the device from which you wish to boot.

7. Enter the following command at the FX-Bug> firmware prompt:

   pboot *c dd*

   where *c* and *dd* are the values displayed for the CLUN and DLUN of the desired boot device.

   (For the example above, you would enter pboot 6 40 at the FX-Bug> prompt to boot from the CD-ROM.)

   The system then boots from the device you specified.

Accessing Menu Options in the Firmware

You are given the option during the boot process to bypass selftests and autoboot. If you bypass these parts of the boot process, the firmware menu is displayed.

Select the appropriate action from the menu displayed. Any time you are presented with the firmware prompt, you can use the menu command to access default options.

Assigning IRQ Levels for ISA Cards in a RISC PC

If you install an ISA card into a RISC PC and the system will not boot, one possible cause may be the conflict of Interrupt Request (IRQ) levels.

According to the ISA bus specification, interrupt lines cannot be shared among devices. Every ISA device must be assigned an IRQ level that does not conflict with any other ISA or PCI device.

You will need to determine which IRQ levels are currently unassigned and then assign one of these to the ISA card, as described in the following procedure:

1. Power down the system.
2. Remove the ISA card.
3. Power on and boot the system.
4. Use the following command to list the interrupt levels for each device on your machine:

   ```
   lsresource -l bus0 -a
   ```

   You may want to refer to the manual page for `lsresource` for information on the output of this command.
5. From the list, choose all ISA and PCI devices in the `Defined` state, and execute the following command for each:

   `lsattr -El` *device_name*

   where *device_name* is the name of the hardware device.

   A `bus_intr_lvl` entry is displayed, showing the bus interrupt (IRQ) level assigned to the device.

6. Select an unused IRQ level for the ISA card you removed.

   (Typically, IRQ levels IRQ5, IRQ7, IRQ14, and IRQ15 are available on PowerStack RISC PC systems.)

7. Shut down and power off the system.
8. Reinstall the ISA card you removed earlier.
9. Power on and boot the system.

Set the device IRQ level for the ISA card according to the instructions in the information that accompanied the ISA board.

Disabling DEC Ethernet Checksum Validation

If you have a DEC PCI card installed and are unable to configure networking, you may need to disable checksum validation for the card. You must check the system error log to confirm this is the reason for your problem

Use the following procedure to check the system error log and toggle the checksum validation option:

1. Use the `errpt` command to access the system error log.

   If the system error log shows an Ethernet adapter CRC checksum failure, complete the remaining steps in this procedure.

2. Type `smit eadap` at the system prompt to access the SMIT `Adapter` screen.

3. Select `Change/Show Characteristics of an Ethernet Adapter` from the `Adapter` screen.

   An `Ethernet Adapter` pop-up screen will be displayed. Press Return to acknowledge the message.

   The `Change/Show Characteristics of an Ethernet Adapter` screen will be displayed.

4. Move the cursor to `CRC validation of ethernet address` and use the Tab key to toggle this selection to `no`.

5. Press Return to apply the changes.

6. Reboot the system to implement the change.

Acting on System and Error Messages 4

This section alphabetically lists messages that can appear during the installation of AIX 4.1. Information about each message is organized in the following manner:

System Message	The system message is displayed in bold type.
Explanation	describes what is likely to have caused the system message to be displayed
System Action	describes what the system does after the message is displayed
User Action	suggests a possible resolution to the problem suggested by the system message

System Messages

0516-404 allocp: Not enough resources available to fulfill allocation. Either not enough free partitions or not enough physical volumes to keep strictness. Try again with different allocation characteristics.

0516-788: extendlv: Unable to extend logical volume

0503-008 installp: There is not enough free disk space in file system /usr (506935 more 512-byte blocks are required.) An attempt to extend this file system was unsuccessful. Make more space available, then retry this operation.

Explanation There is not enough space to complete the installation.

System Action The installation cannot begin until the problem is resolved.

User Action

- Select fewer filesets than the number originally selected for installation.
- Extend the root volume group to another disk. Enter:

  `extendvg rootvg hdisk`*Number*

  where *Number* is the number of the specified disk.
- Remove user-defined file systems to free up space in the `rootvg` file system.
- Follow the instructions in "Troubleshooting a Full /usr File System" on page 2-13.

BOS Install: You chose to create logical volumes mapped exactly as they were on the previous disks, but there are no map files specified in the image.data file.

Explanation On system backup restore, `EXACT_FIT = yes` was specified in the `image.data` file, but no map files were specified in the `image.data` file.

System Action `No-prompt` mode is terminated; the user is prompted.

User Action Do not specify `EXACT_FIT = yes` in the `image.data` file.

BOS Install: Could not create boot image.

Explanation The `bosboot` command failed.

System Action The boot image was not created.

User Action Check the `/var/adm/ras/devinst.log` file for errors.

The bosinst.data file does not specify any bootable disks.

Explanation The `bosinst.data` file does not specify any bootable disks.

System Action `No-prompt` mode is terminated, and the user is prompted.

User Action When the system prompts, select bootable disks to install on.

or

Add a bootable disk to the `bosinst.data` file `target_disk_data` stanzas.

The data file did not specify enough disk space to contain the operating system.

Explanation `No-prompt` mode was specified, and there were not enough disks specified in the `bosinst.data` file to hold the operating system.

System Action `No-prompt` mode is terminated; the user is prompted.

User Action When the system prompts, select disks to install on.

or

Add more `target_disk_data` stanzas to the `bosinst.data` file.

Duplicate lv_data stanzas specified in the image.data file. The installation cannot continue because data may be lost.

Explanation An `lv_data` stanza was duplicated in the `image.data` file.

System Action Installation cannot continue.

User Action Correct the problem and try the installation again.

Duplicate fs_data stanzas specified in the image.data file. The installation cannot continue because data may be lost.

Explanation An `fs_data` stanza was duplicated in the `image.data` file.

System Action Installation cannot continue.

User Action Correct the problem and try the installation again.

The following disks failed the preliminary diagnostics tests: <disk name>

bosset: No hard disks can be accessed.

Explanation	The listed disks failed pretest.
System Action	The system initiated a diagnostic pretest on the specified disk.
User Action	Run full diagnostics on the specified disks.

Encountered an unrecoverable error.

Explanation	The menu subsystem encountered an unrecoverable error.
System Action	The menu is restarted.
User Action	None.

The image.data file contains no vg_data stanza for rootvg. The installation cannot continue.

Explanation	The `image.data` file is incomplete.
System Action	Installation cannot continue.
User Action	Use the default `image.data` file supplied with the product medium.

image.data has invalid logical volume data. Cannot continue.

Explanation	The system could not parse the logical volume data stanzas in the `image.data` file.
System Action	Installation cannot continue.
User Action	Use the default `image.data` file supplied with product medium.

image.data has invalid file system data. Cannot continue.

Explanation The system detected invalid file system data stanzas in the `image.data` file.

System Action Installation cannot continue.

User Action Use the default `image.data` file supplied with the product medium

0516-366 putlvodm: Volume group rootvg is locked. Try again.

0516-788: extendlv: Unable to extend logical volume.

0503-008 installp: There is not enough free disk space in file system /usr. (506935 more 512-byte blocks are required.)
An attempt to extend this file system was unsuccessful. Make more space available, then retry this operation.

Explanation You interrupted the installation of your optional software.

System Action Sometimes, when an installation is interrupted, the system locks the root volume group.

User Action You must unlock the root volume group. Then attempt the installation procedure again. To unlock a root volume group:

1. Be sure you have logged in as root.
2. Enter `chvg -u rootvg`.
3. Enter `smit install` and attempt to install your optional software products again.

installp: An error occurred during bosboot processing.
Please correct the problem and rerun.

0301-52 bosboot: not enough file space to create: /tmp/disk.image

or

0301-152 bosboot: not enough file space to create: /tmp/unix0

Explanation The `bosboot` command was unable to finish processing because of insufficient space in `/tmp`.

System Action The `bosboot` process is interrupted. The error message, the amount of disk space required, and the available disk space are displayed. The disk space required indicates the number of 1024KB blocks required.

User Action Free up space in the `/tmp` file system or extend the `/tmp` file system. Continue or restart the installation process.

To resize the `/tmp` file system and complete the installation:

1. Note the error message preceding this one, and proceed accordingly. You see one of the following messages:
   - `bosboot verification starting`
   - `bosboot startup starting`
2. Change directories to `/tmp`.
3. Enter `smit chfs`.
4. Select `Change/Show Characteristics of a Journaled File System`.
5. Select the `/tmp` file system from the displayed list.

6. Add the additional block space required. The `smit chfs` command requires disk space to be defined in 512KB blocks. Double the required disk space displayed in the system message.
7. Refer to the message that was displayed before the original error message:
   - If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot verification starting`, rerun the installation procedure.
   - If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot startup starting`, enter `install -C`/*directory*. Continue the installation process.

installp: An error occurred during bosboot processing. Please correct the problem.

301-155 bosboot: Invalid or no boot device specified.

Explanation An invalid device is specified with the `bosboot -d` command. The `bosboot` command was unable to finish processing because it could not locate the required boot device. The `installp` command calls the `bosboot` command with `/dev/ipldevice`. If this error does occur, it is probably because `/dev/ipldevice` does not exist. `/dev/ipldevice` is a link to the boot disk.

System Action The `bosboot` process is interrupted.

User Action Determine if the link to the boot device is missing or incorrect, correct the error and complete the installation:

1. To identify the boot device and complete the installation, enter `lslv -m hd5`. The boot disk name is displayed.
2. Create the link between the boot device indicated and the `/dev/ipldevice` file. Enter:

```
ln /dev/boot_device_name\
/dev/ipldevice
```

3. If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot verification starting`, rerun the installation procedure.

   or

   If the message `installp: An error occurred during bosboot processing` was displayed after the message `bosboot startup starting`, enter `install -C`. Continue with the installation process.

You chose to install only onto disks which are not contained in a volume group, but there are not enough of those disks to contain the mksysb image.

Explanation The `EXISTING_SYSTEM_OVERWRITE` field in `bosinst.data` was set to `no`, and prompt was set to `no`, and there were not enough disks on the system which had no volume group on them.

System Action No-prompt mode is terminated, and the user is prompted.

User Action If you want the system to choose which disks to install on, set `EXISTING_SYSTEM_OVERWRITE` in the `bosinst.data` file to `yes`.

or

When the system prompts, select the disks to install on.

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