AIX® Version 4.3.3

FX Series 3.1

Release Notes

FXRNA/IS6

December 2000

Sixth Edition (December 2000)

This edition of the *AIX 4.3.3/FX Series 3.1 Release Notes* applies to AIX 4.3.3A and to all subsequent releases of this product until otherwise indicated in new releases or technical newsletters.

Summary of Changes

The following table provides a summary of changes that have been made to this manual and the dates they have been made.

Change	Date
Original Publication	May 1999
Added note stating that Y2K PTFs on the PTF CD are not factory installed, 2-6. Added note stating that NIM and Split Mode are not compatible, 3-4.	June 1999
Added MVME2400 to list of supported products, 2-4.	September 1999
Updated to reflect AIX 4.3.3 Changes. Added IBM AIX 4.3.3 Release Notes.	October 2000
Added known problems with AIX 4.3.3 RM03, 3-14	December 2000

Contents

APPENDIX A   IBM Release Notes

List of Tables

Introduction

Purpose

The *AIX 4.3.3/FX Series 3.1 Software Release Notes* contain information on new, changed, or removed functionality of the AIX operating system and the FX Series Fault Tolerant Computer; it also contains additional information not documented in other publications.

This document, along with the *AIX 4.3.2 Operating System Installation Guide*, should be reviewed prior to installing the operating system on your computer. Both manuals contain information that is necessary to perform a successful installation or migration of AIX 4.3.3.

This document exists in electronic format on the Motorola Website at http://www.motorola.com/computer/literature. You should occasionally check the electronic version, as it may contain updates and information that was not available at the time this version was printed.

Scope

These *Release Notes* contain information on:

- ❏ general notes about AIX 4.3.3, including new or changed features

- ❏ known problems in this release of the AIX 4.3 operating system

- ❏ notes concerning FX Series systems

- ❏ known problems with this release of the FX Series

- ❏ changes and corrections to documents in the AIX and FX product libraries

- ❏ generic AIX 4.3 notes from IBM.

Prerequisites

Some instructions in this guide assume that you are familiar with:

❑ AIX system administration commands

❑ The System Management Interface Tool (SMIT)

❑ FX Series systems

❑ software installation operations, such as apply and commit

Overview of Contents

The *Release Notes* are organized as described in the table below.

This Chapter...	Discusses...
Chapter 2, *General AIX*	features, guidelines, and known problems in AIX on Motorola Systems
Chapter 3, *FX Series Systems*	features, guidelines, and known problems pertaining to AIX on FX Series systems and to FX Series hardware
Appendix A, *IBM Release Notes*	generic AIX features, guidelines, and known problems

Related Information

Optional Software Information

Licensed programs include AIX 4.3 and optionally purchased products. Each program can have one or more separately installable filesets. The Package Installation Database for Current Media is an HTML database that contains information about the contents of these separately installable filesets.

README Files

For information on how to view the README files for the base operating system (BOS) and optional software products, refer to the *AIX 4.3 Installation Guide* which is part of the HTML library which came with your operating system.

Some README files may be shipped in separate directories that are not accessible if you follow the procedure described in the *AIX 4.3 Installation Guide*. To find the README files installed on your machine, use this command:

```
find /usr -name "*README" -print
```

Softcopy Documentation

The Motorola titles listed below are available in pdf format on the MCG literature page, at:

http://www.motorola.com/computer/literature

The majority of the IBM AIX documentation library is shipped electronically as an HTML database. For information on installing the HTML documentation, see The *AIX 4.3.3 Operating System Installation Guide*. The IBM library is also available on their website at:

http://www.rs6000.ibm.com/resource/aix_resource/Pubs/Doc_Overview/

Hardcopy Documentation

The Motorola titles listed below can also be ordered on the Motorola Computer Group literature page, at:

http://www.motorola.com/computer/literature

Hardcopy AIX documentation can be ordered directly through IBM's website at:

http://www.rs6000.ibm.com/resource/aix_resource/Pubs/Doc_Overview/

Motorola AIX and FX Documentation:

❏ *AIX 4.3.3 Release Notes (FXRNA/IS5)*

❑ *AIX 4.3.2 Operating System Installation Guide (AFX3INSA/IS1)*

❑ *AIX System Diagnostics (ASD) Quick Reference (AXASDA/QR1)*

❑ *Configuring and Maintaining the System (FXCMSA/UM1)*

❑ *Making and Using Backups (AFXBKUPA/IS1)*

❑ *Managing System Storage (FXMSSA/UM2)*

❑ *Installing and Configuring NCDware (AXONCDA/IS1)*

❑ *Administering your Fault Tolerant System (FXADMA/UM1)*

❑ *Motorola FX Series Fault Tolerant Architecture Overview (FXARCHA/UM2)*

❑ *FX Series Diagnostics and Troubleshooting (FXTRBLA/UM2)*

❑ *FX Series LED and Alarm Quick Reference (FXLEDA/QR1)*

❑ *FX Series System Hardware Installation Guide (FXHINSA/IH1)*

❑ *FX Series Application Developer's Guide to the Configuration Management System (FXAPPDA/PG1)*

❑ *FX Series Split Mode for AIX Overview and User's Guide (FXSPLTA/UM1)*

❑ *FX Series Writing a Fault Tolerant Device Driver (FXWFTDA/PG1)*

General AIX $\boxed{2}$

Overview

This chapter includes information on:

- ❏ new generic features of AIX 4.3.3
- ❏ value-added features specific to Motorola's AIX 4.3.3 product
- ❏ general guidelines concerning AIX 4.3.3
- ❏ known problems along with workarounds where possible

What's New in this Release

The following features have been implemented in AIX 4.3.3:

- ❏ support for IBM's version of AIX 4.3.3
- ❏ electronic documentation in PDF format

New AIX Numbering Conventions

MCG's base level release of AIX 4.3.3 was released on September 30, 2000. Subsequent to that release, we will make available updated versions of AIX 4.3.3 using a new "update" nomenclature where we will add an alphabetic character to indicate an update. While future releases will be referred to as "updates," they may contain significant enhancements and new functionality.

The base level AIX 4.3.3 release is referred to as AIX433 or AIX 4.3.3 base level.

The next AIX 4.3.3 update is referred to as AIX433A or AIX 4.3.3 update A. The CDs shipped with update A contain newer versions of some filesets but it is not a fully new AIX release. The filesets that have been modified

2

will have newer VRMF numbers than the filesets that were on the previous AIX 4.3.3 CD. This will allow customers who need functionality that was added to an update CD to install the new functionality on the system and the end result will be exactly the same as installing a PTF with the same VRMF level onto a system.

Future updates will then be known as "update B", "update C", etc.

As new PTFs are created, they will tested on the most current AIX 4.3.3 update that has been released by MCG. Customers may need to install filesets from an update CD prior to or at the same time as some PTFs are installed.

Value-Added Features

The AIX 4.3.3 product is based on IBM's AIX 4.3.3 operating system. Motorola has made changes to this product to support Motorola-specific hardware platforms, while retaining the functionality and command structure of IBM's AIX 4.3 operating system. This section describes value-added features that apply to all systems running Motorola's version of the AIX 4.3 operating system.

Unsupported Systems

This release does not support the following MCG systems. Please contact your Motorola support personnel for additional help.

- ❏ MVME2100
- ❏ MVME5100
- ❏ Series I/MP/MP Rack
- ❏ MPX5000/MPX5500

End of Life Products (EOL'd)

These products have been end of lifed. Please contact your Motorola support personnel for additional help.

2

- ❏ RISC PC and RISC PC Plus
- ❏ Series E and Series EX
- ❏ Pro/Net4000
- ❏ MPX100
- ❏ MVME1600

Supported Products

This release of AIX 4.3.3 supports the following MCG products:

- ❏ FX Series
- ❏ MTX60x
- ❏ Ultra and Atlas Motherboards
- ❏ MVME2300
- ❏ MVME2400
- ❏ MVME2600/MVME2600R
- ❏ MVME2700
- ❏ MVME3600/MVME3600R
- ❏ MVME4600/MVME4600R
- ❏ XR60x
- ❏ XR750

2

Firmware Levels

These products must have, as a minimum, the following firmware levels:.

Table 2-1. Firmware Requirements for Various Hardware

Platform	Firmware Levels
FX Series	FXBUG 1.7
MVME260X, 360X, 460X (boards only)	PPC1BUG 3.3
Atlas and Ultra boards	PPC1BUG 1.8
Ultra Plus boards	PPC1BUG 1.9

Note Do not try to install firmware or an operating system on a computer system if you are not sure that the system is supported by that particular version of the firmware or OS.

AIX System Diagnostics (ASD)

ASD provides a set of on-line diagnostic tools and test suites to allow you to run diagnostics on individual system components, including:

- ❏ SCSI controllers and devices

- ❏ single or multiple floppy devices

- ❏ file systems

- ❏ internal or external asynchronous subsystems

ASD commands have been integrated with the standard SMIT interface. For additional information on ASD, see the *AIX System Diagnostics (ASD) Quick Reference*.

Note MCG's AIX System Diagnostics are intended to replace the **diag** command. Using diag is not recommended, because it is specific to IBM hardware and may cause problems with non-IBM systems.

xdiff Utility Available

The xdiff program is available in AIX 4.1 Service Level AOS1.2 and later releases. xdiff is a graphical interface to the diff command that allows side-by-side viewing of differences between files and automated merging of selected differences to create a new version of a file.

xdiff is automatically installed with the Personal Productivity bundle. Alternatively, you can install it directly from the X11.apps.motorola fileset.

Enabling Kernel Printfs

On MCG systems, you can enable kernel printfs by entering debug 2 at the debugger prompt. This feature is enabled at the first breakpoint/prompt on FX Series systems and on VME systems with the following exception. On VME systems on which the debugger has been invoked using the bosboot -I command or through NIM, the debug 2 command does not work at the first breakpoint. In these situations, a second breakpoint occurs in order to enable the debug 2 command.

Note   For the FX Series, this works at the first breakpoint.

Environmental Monitor Commands

These new commands are used with the environmental monitor and are supported on all systems except RISC PC (and RISC PC Plus) and FX systems:

- ❏ envctl

- ❏ envdiag

- ❏ rc.motpowerfail

These commands are documented in the manual pages in section 1M. You must use the **man** command to access these manual pages.

2

Environmental Monitor Special Files (Devices)

These pages describe aspects of environmental monitor special files (devices) and are supported on all systems except RISC PC, RISC PC Plus, PowerStack II, and FX systems:

- ❏ envmon

- ❏ envmon_msg

- ❏ envmon_odm

You can find these manual pages in section 7. You must use the `man` command to access these manual pages.

which_fileset Command Not Supported for MCG Additions to AIX

No additions have been made to bos.content_list for MCG filesets therefore the 'which_fileset' command will not find fileset information for MCG files.

MCG Man Pages

The man pages for MCG-specific commands are not yet in HTML format and cannot be found using the docsearch facility. You can access information on MCG utilities using the man command.

Year 2000 Readiness

IBM's AIX 4.3.3 is year 2000 compliant.

Installation

This section contains information which may be important when installing AIX 4.3.3 on your system.

Backups

It is strongly recommended that a system backup (mksysb backup of the rootvg) be made prior to attempting an installation or update of the operating system. This provides a fall-back position in the rare instance where installation or migration failures occur.

AIX Version 4.3.3 Shipped on multiple CD s

AIX 4.3 versions are multi-volume collections. In previous versions of AIX a second CD was also used but each CD only contained information on the packages on that particular CD. In AIX 4.3 each CD contains a table of contents for the packages on that particular CD plus a table of contents for all 4 volumes that make up the base OS.

What this means to the user is that the installation process for the base OS will ask the user to insert volume 1, 2, 3, or 4 as needed to install the selected packages.

The documentation CDs, the bonus pack CDs and the PTF CD are additional CDs shipped with AIX but are not listed on the table of contents for the base OS CDs.

The bonus pack packages and the PTFs are installed separately.

The CDs you received with AIX will consist of:

- ❏ AIX 433 Vol 1 Base OS

- ❏ AIX 433 Vol 2 Base OS

- ❏ AIX 433 Vol 3 Base OS

- ❏ AIX 433 Vol 4 Base OS

- ❏ AIX 433 PTFs

- ❏ AIX 433 Docs - Base Set

- ❏ AIX 433 Docs - Extended Set

2

Note Refer to the IBM AIX Release Notes in Appendix A for additional information on the contents of the documentation CDs.

❏ Bonus Pack Vol 1

❏ Bonus Pack Vol 2

❏ Bonus Pack Vol 3

Note NCDware does not ship with AIX 4.3.3. You can order NCDware 3.2.1 separately using 82AIXNCDA as the part number.

INSTALLING FIXES (PTFS) FOR AIX 4.3.3

MCG now ships a PTF CD with each AIX OS version. The PTFs should be installed ONLY after a successful migration or installation of the base OS.

You should install all of the PTFs on the PTF CD insert the PTF CD into the CDROM drive by executing

```
smit update_all
```

If you wish to selectively install PTFs from the PTF CD insert the PTF CD into the CDROM drive and execute

```
smit install_selectable_all
```

and then follow the instructions on the screen to list the PTFs on the CD and select the desired PTFs.

See *AIX 4.1.5 Split Mode PTFs* on page 3-2 for more information.

Minimum Hardware Requirements

AIX 4.3.3 requires the following minimum hardware configurations:

❏ 32 MB physical memory for the base OS

❏ 64 MB physical memory for some Bonus Pack packages

2

❏ 64 MB minimum initial paging space (/dev/hd6)

❏ 8 MB minimum free space in /tmp

Other disk space requirements are listed in the IBM AIX Release Notes in Appendix A.

Migrations from AIX 4.1.5 to AIX 4.3.3 Limitations

For non-FX Systems, MCG has only tested migrations to AIX 4.3.3 from AIX 4.1.5 and 4.2.1. No support for migration from 4.1.4 is provided although migration will show up as an option when the AIX CD volume 1 is booted on an AIX 4.1.4 system. It is recommended that you first migrate to AIX 4.1.5 and then migrate to 4.3.3.

In order to migrate from AIX 4.1.5 to AIX 4.3.3 on an FX Series system you must first install a series of PTFs and rebuild your backup tapes. For additional information see *Existing MKSYSB Tapes May Fail to Install on FX Series Systems Running AIX 4.1.5* on page 3-15.

Note   AIX 4.1.4 is no longer supported on the FX Systems. It is not Year 2000 (Y2K) ready. You must first upgrade to 4.1.5 R3 before upgrading to 4.3.3.

Migrating to AIX 4.3.3 From AIX 4.1.5 or AIX 4.2.1

Due to the multi-volume packaging of AIX 4.3.3 and the fact that many base OS filesets are now also on volumes 2 and 3, it is very important to follow the installation instructions when migrating from AIX 4.1.5 or AIX 4.2.1.

A basic migration requires booting from the AIX 4.3.3 CD (volume 1) and performing a migration. Afterwards it is necessary to migrate the filesets on volumes 2, 3, and 4 by executing

```
smit update_all
```

Detailed instructions are provided in the *AIX Operating System Installation Guide* available at:

2

http://www.motorola.com/computer/literature/

FX Filesets Must Be Removed When Creating NIM Spot Resource for Non-FX Targets

The filesets listed below have been added to the NIM install images in order to support FX Series systems. If you are creating a NIM spot resource for installing on non-FX target systems, you should remove the filesets listed in Table 2-2 by

1. creating an lpp_source directory,

2. populating the directory from the installation images on the CD,

3. removing the filesets in Table 2-2,

4. and creating the spot resource from the lpp_source directory.

Note   If you want to use a single NIM server to support both FX Series systems and non-FX systems, then you should create two spot resources, one with and one without the following filesets.

Table 2-2. Filesets to Remove from Non-FX Spot Resources

devices.MOT_3FF0.base	devices.mbus.MFIOPM
devices.MOT3F10.base	devices.mbus.POWER1
devices.ftscsi.disk	devices.mbus.REP
devices.ftscsi.tape	devices.mbus.REPPM
devices.iobus.am79c965	devices.mbus.SCSI1
devices.iobus.fxasio	devices.mbus.SCSIPM
devices.iobus.mosh	devices.mbus.SICM
devices.man.en_US.sys.ft.data	devices.mbus.SS7PM
devices.man.en_US.sys.fxnvram.data	devices.mbus.SS7_1
devices.man.en_US.sys.iobus.data	devices.mbus.SYNC1
devices.man.en_US.sys.mbus.data	devices.mbus.SYNCPM
devices.man.en_US.xrft.base.data	devices.mbus.T1PM
devices.man.en_US.xrft.cms.presaddr.adt.data	devices.mbus.T1_1

Table 2-2. Filesets to Remove from Non-FX Spot Resources

devices.man.en_US.xrft.cms.rte.data	devices.msg.en_US.iobus.am79c965
devices.man.en_US.xrft.flash.data	devices.msg.en_US.iobus.fxasio
devices.man.en_US.xrft.iscs.adt.data	devices.msg.en_US.pci.MOT3101
devices.man.en_US.xrft.iscs.rte.data	devices.msg.en_US.sys.ft
devices.man.en_US.xrft.lvm.data	devices.msg.en_US.sys.iobus
devices.man.en_US.xrft.ondd.data	devices.msg.en_US.xrft.base
devices.man.en_US.xrft.pmft.rte.data	devices.msg.en_US.xrft.cms
devices.man.en_US.xrft.smmgt.rte.data	devices.msg.en_US.xrft.flash
devices.man.en_US.xrft.tstiscs.rte.data	devices.msg.en_US.xrft.iscs
devices.mbus.8MM1	devices.msg.en_US.xrft.lvm
devices.mbus.ASYNC1	devices.msg.en_US.xrft.ondd
devices.mbus.ASYNCPM	devices.msg.en_US.xrft.smmgt
devices.mbus.ATM1	devices.sys.finj
devices.mbus.ATMPM	devices.sys.ft
devices.mbus.CDROM1	devices.sys.fxnvram
devices.mbus.CPU1	devices.sys.iobus
devices.mbus.CPUPM	devices.sys.mbus
devices.mbus.DAT1	devices.sys.uart
devices.mbus.DISK1	devices.xrft.base
devices.mbus.E1PM	devices.xrft.cms
devices.mbus.E1_1	devices.xrft.flash
devices.mbus.FANS1	devices.xrft.iscs
devices.mbus.FDDI1	devices.xrft.lvm
devices.mbus.FDDIPM	devices.xrft.ondd
devices.mbus.ICM	devices.xrft.powerd
devices.mbus.LAN1	devices.xrft.smmgt
devices.mbus.LANPM	devices.xrft.tstiscs
devices.mbus.MFIO1	prpq.p91157

2

AIX 4.3.3 Does Not Support scsiTerminal Servers

Do **not** install AIX 4.3.3 on a system using the scsiTerminal Servers as no AIX 4.3.3 driver is provided for these devices:

❏ STS-S8P

❏ STS-S16P

AIX 4.3.3 Does Not Support the Systech RCS/4000 Terminal Server

Do not install AIX 4.3.3 on a system using the Systech RCS/4000 terminal server as no AIX 4.3.3 driver is provided for these devices:

❏ RCS4108

❏ RCS4116

Installing the HTML Documentation Library

For AIX 4.3, IBM has reintroduced their electronic documentation in HTML format. For information on installing and accessing the HTML library see the *AIX 4.3.3 Operating System Installation Guide*.

SystemView License Use Management Runtime

Some of the Licensed Program Products for the AIX 4.3 release have been modified to use license management software. These products require a license password in order for you to use them. SystemView License Use Management for AIX is the new license management product.

Base Operating System

Multiple Beep Volume Settings Not Supported

The hardware that generates the system's "beep" does not support multiple volume settings. Thus, the user's volume setting is ignored, except to check whether the setting is Off.

PowerStack II Legacy ISA Slave DMA Limitations

PowerStack II systems can only perform legacy ISA slave DMA using compatibility timing. A device driver that requests a faster timing mode is forced to use compatibility timing as well. This can affect the performance and throughput of an ISA device that uses legacy ISA slave DMA. Scatter/gather ISA DMA is not affected by this limitation.

Known Problems on All Systems

This section contains information on known problems in this release of AIX 4.3.3. Workarounds have been provided whenever they are available.

For additional troubleshooting information, refer to *Installation Troubleshooting* and *Problem Solving Guide and Reference*.

Boot Logical Volume May Be too Small to Run install_all Command

Problem

For systems where install_all is used to install filesets that are not part of a bundle install, the boot logical volume (/dev/hd5) may be too small to hold the boot image, leading to an error message similar to:

```
dd: 0511-053 The write failed.

There is a request to a device or address that does not exist.
```

2

```
8299+1 records in.

129+1 records out.


0301-161 bosboot: dd failed to copy bootimage.

0301-165 bosboot: WARNING! bosboot failed - do not attempt to boot
device.
```

Fix

Assuming hdisk0 is the boot disk, the fix for this problem is to return to the pound-sign (#) prompt and execute the following commands:

```
rmlv -f hd5
mkboot -c -d /dev/hdisk0
mklv -y'hd5' -t'boot' -a'e' rootvg 2 hdisk0
lslv -m
```

> Verify that the physical partitions shown under the column labeled "PP1" are contiguous partitions. For example, partitions 1 and 2 or partitions 060 and 061, etc. If the two physical partitions are not contiguous you must start over with the rmlv command at the top of this section. When re-executing the mklv command it will be necessary to use the -m option to specify the physical partitions to be used. Refer to the man pages for mklv for information on how to use the -m option.)

```
bosboot -a -d /dev/hdisk0
```

Duplicate SMIT Entries Appear After a Migration from AIX 4.1.5

Problem

There are many duplicate SMIT entries after a migration from 4.1.5. MCG will provide a script to fix this problem in the future. The script will be available from MCG's external web site. Until then this and similar messages can be safely ignored:

```
**** ERROR ****

1800-104 An alias entry id duplicates another alias or menu entry
in the SMIT/ODM database.  (Specified sm_menu_opt has the
following duplicate id:

"easy_install".)

Duplicate entries are ignored.

Use local problem reporting procedures.
```

Highest Resolution Not Available on Systems with 1MB Display Memory Adapters

Problem

If your system contains only 1MB of display memory (either on the motherboard or on a PCI card), the highest resolution you are able to use is 1024x768 mode. SMIT allows you to select a higher mode (1280x1024), but your system does not support it and defaults to 1024x768 resolution mode.

Workaround

If you must use a higher resolution than 1024x768 mode, you need to add display memory or add a card with more than 1MB of display memory to your system.

2

Floppy Drives Do Not Detect Disk Density

Problem

Floppy disk drives included in Motorola AIX systems support only 1.44Mb floppy media. The drives are not able to distinguish between low density (720Kb) and high density (1.44Mb) disks. If the fdformat command is run without the -h option, the system will try to format the high density disk as a low density floppy. This will put the floppy drive in a state where it cannot be accessed until the system is rebooted.

Workaround:

Always use the fdformat command in the following fashion.

```
fdformat /dev/fd0 -h
```

Extraneous Error Messages on MVME4600 Systems

Problem

When installing AIX on MVME2600, MVME3600, or MVME4600 systems with a PMC span card connected and a version of PPC1BUG prior to version 3.2, the following error message appears:

```
Method error (/etc/methods/cfgbaud_isa -l paud0):
     0514-040 Error initializing a device into the kernel.
```

This error indicates that the audio driver is loaded, but no audio hardware exists.

This message also occurs if you start SMIT and follow the procedure to install or configure devices added after IPL, or if you run `cfgmgr`.

The error message does not affect other aspects of system function.

Workaround

Install PPC1BUG 3.3 RM04 or later to fix the error message.

VMEbus Errors Can Cause Software Panics on VME2600, VME3600, and VME4600 Systems

Problem

There is a problem with MVME2600, MVME3600, and MVME4600 hardware which causes the VME bus to hang if a VME bus DMA operation performed by the VME controller terminates with a VME bus error. If this happens, the system will detect the problem and panic, since there is no way for software to recover from this problem.

Workaround

Drivers and other applications must prevent writes to VME bus addresses which will cause VME bus errors. Note that the system calls to `busput`, `vmerw`, and `ioctlx` (which read the VME bus) use the effected controller.

Configuration methods must ensure that board probes use only read accesses to potentially unavailable board addresses.

2

Ethernet Fails to Configure after a Migration Install on PowerStack II and MPX Systems

Problem

When migrating from an earlier version of AIX, ethernet may fail to configure with the following message appearing:

```
Action Required:
The DT messaging system could not be started.
```

To correct the problem:

1. Choose [OK] to return to the login screen.

2. Select `Failsafe Session` from the login screen's option.

3. Check to see that the hostname is correct in `/etc/hosts`.

Other hostname problem can be corrected by using the command; `SMIT MKTCPIP`.

For additional information, see the DT User's Guide.

This problem occurs because of differences in the way the different versions of AIX manage the ethernet ODM attributes. These differences result in two ODM entries existing for the single physical ethernet devices, meaning that the latest version will not configure.

Workaround

❏ From the FailSafe session, remove the existing ethernet ODM attributes:

```
rmdev -ld ent0.
```

Reboot the system.

Running "multiloop" on an MVME3600 System Causes an Extraneous Error Message

Problem

With two PMC FDDI cards in an MVME4600 system, the following error message is displayed on the console when 'multiloop' is running. The FDDI cards are connected in a ring to another system with a 386 FDDI board.

```
Warn: adap_read: error vp 0x50C1E8C0 0xD4A flags 0x3400AD4A
inflight 0x0Warn: adap_read: error vp 0x50C1E880 0xA7A flags
0x3400AA7A inflight 0x0Warn: adap_read: error vp 0x50C1E440 0x87A
flags 0x3400A87A inflight 0x0Warn: adap_read: error vp 0x50C1F080
0x1000 flags 0x24000000 inflight 0x0Warn: adap_read: error vp
0x50C1ED00 0x15A flags 0x1400B15A inflight 0x0Warn: adap_read:
error vp 0x50C23100 0x87A flags 0x3400A87A inflight 0x0Warn:
adap_read: error vp 0x50C1EB40 0xEC2 flags 0x3400AEC2 inflight 0x0
```

Workaround

These messages can be safely ignored.

FX Series Systems

Overview

AIX 4.3.3 contains special functionality for FX Series System Release 3.1. Motorola has made changes to IBM's AIX 4.3.3 OS in order to support Motorola-specific hardware platforms and to add fault tolerance, while retaining the functionality and command structure of IBM's AIX 4.3 operating system.

This chapter describes information about and guidelines for FX Series systems.

Installing AIX 4.3 on FX Series Systems

This section provides information about installing AIX on FX Series systems.

AIX 4.3.3 on FX Series Systems Requires Version 1.7 of the FXBug Firmware Package

In order to run AIX 4.3.3 on an FX Series system, you must update to FXBug Version 1.7 RM01. AIX 4.3.3 now has an automatic firmware update. See *Automatic Firmware Update (for Series FX only)* on page 3-9.

Finally, check the system clock to ensure that it has not drifted.

BOS-NEW Upgrades to AIX 4.3.3 Are Not Recommended

Performing a BOS-NEW upgrade (new and complete overwrite) on the Split Mode secondary to 4.3.3 when the primary is running at 4.1.5 is not considered to be a reliable means of upgrading the system.

3

Do not perform a BOS-NEW install on an FX system secondary while in Split Mode, from an older OS to a more recent OS (for example, from AIX 4.1.5 to 4.3.3). Instead, perform a BOS-MIGRATION upgrade using the procedure in *Split Mode Procedure for BOS-MIGRATION Install* on page 3-2.

Split Mode Procedure for BOS-MIGRATION Install

Use this procedure for using Split Mode to migrate to AIX 4.3.2a on an FX Series system running 4.1.5. In using this procedure, it is assumed that the operator is already familiar with the Split Mode process. Refer to the *Split Mode for AIX Overview and User's Guide* for more information.

1. Install the following 4.1.5 PTFs on the 4.1.5 system prior to Split Mode.

Table 3-1. AIX 4.1.5 Split Mode PTFs

PTF Number	Fileset
M457769	bos.rte.bosinst 4.1.5.4
M449725	bos.sysmgt.sysbr 4.1.5.4
M000151	devices.xrft.smmgt.rte 4.1.5.5f

2. Rebuild your mksysb tapes.

3. Edit `/var/ft/split_cfg` and set `g_UPGRADE="BOS-MIGRATION"`.

4. Split the system using:

   `splitstate -s SPLIT`

5. Boot the secondary (SYSNEW).

6. On the secondary (SYSNEW), run:

   `spstart -S`

   The system will reboot.

7. On SYSNEW, perform a MIGRATION install to 4.3.3.

8. Reboot the secondary.

9. On the secondary (SYSNEW), run:

```
spstart -R
```

The system will NOT reboot.

10. Continue with splitstate operations to FT_COMPLETED:

```
splitstate -s FT_COMPLETED
```

Splitmode Procedure for 4.3.2a to 4.3.3

Use this procedure for using Split Mode to migrate to AIX 4.3.3 on an FX Series system running 4.3.2a. In using this procedure, it is assumed that the operator is already familiar with the Split Mode process. Refer to the *Split Mode for AIX Overview and User's Guide* for more information.

1. Install the following 4.3.2a PTFs on the 4.3.2 system prior to Split Mode.

Table 3-2. AIX 4.3.2a Split Mode PTFs

PTF Number	Fileset
M000190	devices.xrft.iscs.rte
M000189	devices.xrft.iscs.adt
M000188	devices.iobus.am79c965
M000187	devices.xrft.smmgt.rte
M000186	devices.iobus.am79c965.rte
M000185	devices.xrft.smmgt.rte
M000227	devices.xrft.smmgt.rte
M000226	devices.iobus.am79c965.rte
M000225	devices.msg.en_US.iobus.am79c965.rte
M465246	box.rte.lvm

2. Rebuild your mksysb tapes.

3. Edit `/var/ft/split_cfg` and set `g_UPGRADE="BOS-PRESERVATION"`.

4. Split the system using:

```
splitstate -s SPLIT
```

3

5. Boot the secondary (SYSNEW).

6. On the secondary (SYSNEW), run:

   ```
   spstart -S
   ```

   The system will reboot.

7. On SYSNEW, perform a PRESERVATION install to 4.3.3.

8. Reboot the secondary.

9. On the secondary (SYSNEW), run:

   ```
   spstart -R
   ```

   The system will NOT reboot.

10. Continue with splitstate operations to FT_COMPLETED:

    splitstate -s FT_COMPLETED

Support for Network (NIM) Installations Has Been Added

Support has been added to allow network (NIM) installations to and from FX Series systems. An FX system can serve as a NIM master when installing another standalone machine (including FX and non-FX systems); and FX systems can be installed as a standalone NIM client. The installation of diskless and dataless systems is not supported. NIM is incompatible with the Split Mode process; if you are using Split Mode, do not install over the network.

For information on how to configure an FX system as a master or client, see the *AIX 4.3.2 Operating System Installation Guide*.

General Hardware Notes

The following issues are related to FX Series system hardware.

PPC750 Processors are Enabled

The 1.7 version of FXBug or later is needed in order to run using the PPC750 processor.

Setting up Telco Alarms

You can classify the severity of a fault by noting the Telco status LED that is lit. These LEDs are found on the front of the Fan Trays. In addition you can hook up the corresponding alarm relays found on the back of the InterConnect Module to the Central Office Alarm bus. If you have a Model 626, do NOT connect the alarm relays on the back of InterConnect Module in the Expansion Chassis. Use the alarm relays on the back of the InterConnect Module in the Main Chassis only.

Use ESD Mitigating Procedures

ESD mitigating procedures should be used at all times when working around the FX series. It is especially important to use this protection when inserting tapes into the tape drive.

Offlining Personality Modules Not Recommended

Do not offline a personality module directly. Instead offline the personality module's associated module. This offlines both the controller and the personality module in a safe and consistent manner.

Hot Pull Support

You can hot pull, hot insert, and hot integrate most modules on FX Series systems. To hot pull, hot insert, and hot integrate means that you can remove, insert, and integrate any of these modules without power cycling, rebooting, or otherwise stopping the system. We do however, recommend that you offline the module before you remove the module. Refer to *Hardware Installation* for more information. Do not hot pull modules during Split Mode.

Note   Modules should be plugged into the personality modules, the personality modules should not be plugged into already seated modules. In other words, you should always remove the module prior to removing a personality module, and you should replace the personality module prior to replacing the module.

UMFIO Modules

3

The following issues are related to the Ultra Multi-Function I/O (UMFIO) modules.

Default Physical Partition Sizes Varies for Different Sized Disks

The value of the default physical partition size (PPS) depends on the size of the physical disks in your system. For example, 2GB disks have 4MB default physical partitions, and 9GB disks have 16MB default partitions.

As disk sizes continue to increase, the difference in default partition sizes poses a possible problem, because AIX forbids certain operations, such as `extendvg` and disk mirroring, when the physical partition sizes are unequal. Thus, for example, mirroring cannot take place between a 4GB disk and a 9GB disk unless the partition sizes are reset manually.

Because of the possible difficulties posed by this situation, we recommend that you take the time to determine the maximum disk size you will be using during the operating lifetime of your system and manually adjust the partition sizes of your disks to the appropriate sizes.

For further information, refer to the on-line AIX documentation which came with your operating system.

CPU Module Subsystem

The following issues are related to the CPU module subsystem.

Autoflash of CPU Firmware Now Indicates CPUs in Integrate State

When a CPU is being integrated that does not have the same firmware version as the master CPU, its firmware will automatically be flashed to match the master's prior to being reintegrated.

In AIX 4.1.5r3, the system and module LEDs did not indicate that the CPUs were in the integrating state, and their LEDs did not begin to flash until after their firmware had been autoflashed. As of AIX 4.3.3, the LEDs for the system and these CPUs will begin to flash prior to having their firmware autoupdated rather than afterwards.

Set Time on New CPU Modules

If you bring the system down to replace any of the CPU modules with a new CPU module, make sure that the time on the clocks in the new CPU modules is set to the current time.

If a new CPU module is added to a running system, then we highly recommend that the Real Time Clock be initialized previously using some other chassis. There is a minor but potential risk that this problem can cause future problems even if the CPU module is replaced when AIX is running. Refer to *CPU Reintegration Has Temporary Critical Fault Under Heavy Load* on page 3-17 for more information.

To check and set the clock on a CPU module, follow these steps:

1. Stop the reboot in the bug if it is set to autoboot during power on.

2. At the bug prompt check that the time on the master CPU is correct:

```
FX-Bug>time
```

3. If the time is not correct, set it using the set command:

```
FX-Bug>set mmddyyhhmm
```

4. Where the format for the time is "month month day day year year hour hour minute minute." So that the time comes up correctly once the system boots, you must set the time in Greenwich Mean Time (GMT), not local time. For example, Mountain Standard Time (MST) is 7 hours earlier than GMT.

Once the system boots, make sure all the CPU modules are in sync so they all have their clocks set to the same time.

3

If you replace only one of the CPU modules while the system is down, make sure it is not the master during boot by leaving it unlatched. Reintegrate the module after boot and its clock will be set to the current time.

CPU Module Status after a Reboot

On FX Series systems, the AIX installation process is designed to automatically bring online and integrate all CPU modules found in the system. CPU modules retain their state across reboots of the system. CPU modules that are online and integrated before a reboot are automatically brought back online and integrated after the reboot and CPU modules which are offline before a reboot remain offline after the reboot, except in the case where booting manually was forced off of a previously off-lined CPU module.

The process of onlining and integrating all CPU modules will not complete until several minutes after the login prompt is displayed.

Do Not Use ftctl Program to Online and Offline CPU Modules

Use the SMIT interfaces or if desired the `modchange` command to online, offline, and acknowledge faults in the CPU modules. Do not use the `ftctl` program included in the FX Series to online and offline CPU modules. `ftctl` may leave your machine in an undesirable state that is difficult to recover from without rebooting. The `ftctl` command can still be used to view CPU module information (that is, `ftctl -status`).

Also, do not use the `ftctl -split`, `ftctl -unsplit`, and `ftctl -splitswitch` during Split Mode. These are low level commands that are only partially responsible for system transitions.

OS Watchdog

The OS watchdog timer is currently set to 1 second. The operating system however refreshes the timer every 0.5 seconds.

ECC Parity Handling

An ECC hard error encountered on a simplex system results in a panic. A CPU module reporting an ECC hard error in a DMR or TMR system is taken offline and powered down.

Automatic Firmware Update (for Series FX only)

During the boot cycle, if the system detects newer firmware, then the firmware on the booting CPU will automatically be updated. The CPU will then be reset to use the new version.

When this occurs, the operator will see the following messages on the console after issuing the `pboot` command.

```
A newer version of firmware exists.

An update of the firmware is required for this release.

Automatic firmware update will begin now.

This may take a few minutes, please be patient.

System will restart when finished.
```

After the firmware is updated, the operator will be back at the FX-Bug prompt.

Interconnect Module (ICM)

The following issues are related to the Interconnect module.

Any Interconnect Module Failure in a Domain Takes Down the Entire Domain

In systems with expansion chassis, the failure of an ICM module in either the main or expansion chassis takes down that entire IO domain. Because the IObus does not function properly if any of the ICM modules providing power to terminate the bus fails, the system powers off all the modules in that domain.

3

The main chassis ICM module is listed as the module at fault even if the expansion chassis ICM module was the one that failed. Look at the failure reports in the system status log, `/var/ft/changed_log`, to determine which module actually failed.

Interconnect Modules May Be Set to Come On-Line Automatically After a Loss of Power

The behavior of the Interconnect Modules (ICMs) has been changed so that you can set them to automatically come on-line after a power failure occurs. For example, if a cable is pulled and reinserted, the system will automatically bring the ICM online and will reestablish the disk mirrors. Once the power fails, the system will break all disk mirrors prior to reintegrating. Automatic reintegration of ICMs has been modified in AIX 4.3.3 to detect transient power losses with a duration as small as 5ms. CPUs that may have gone offline when the power went down will also be reintegrated when the power returns.

Refer to the `powerd` man page for details on how to set the `auto_integrate` attribute.

CPU Modules May Go Offline When an Interconnect Module Fails

If an ICM module fails due to power loss, the loss of power usually sends all significant CPU modules into E-state. The hardware must do this to prevent a possible IObus lockup when the power loss occurs. If the system is running with:

❏ two CPU modules one of them reports itself offline

❏ three CPU modules then either:

– one module is out-of-sync (to be automatically onlined) and one module is offline OR

– two modules are offline

If CPU modules fail when an ICM module fails, they may be reintegrated immediately, without waiting for the ICM module to be replaced or reconnected to the power. We recommend first bringing the CPU modules back online before reintegrating the ICM module. CPU modules take less time to integrate than the disk mirroring operations that start when the ICM module and its dependent modules in that domain are reintegrated. If automatic reintegration of ICMs is enabled, the system will attempt to reintegrate any CPUs lost due to a power loss that causes an ICM to go off-line.

Do Not Remove the Interconnect Module without Disconnecting the Power Cord

ICMs can be pulled out with the system still running (that is hot pulled), but you must remove the power cord first. The ICM modules are the only hardware modules whose latches do not disconnect the modules from the power.

⚠ **Caution**

Pulling the module (or putting it back in) with the power connected causes arcing on the voltage pins. Repetition of this would eventually cause pitting of the contacts, leading to unreliable operation.

Power Module and Fantrays

The following issues are related to the Power module and Fantrays.

A New Fan State, Removed, Has Been Added for AIX 4.3.3

A Removed state has been added for fantrays in order to provide a grace period for removing and reseating a fantray without bringing it offline.

Previously, removing a fantray may cause it to go offlined, meaning that removing both fantrays in a chassis would result in the system shutting itself down to prevent overheating. The remove state provides a one-

minute grace period before offlining the fantrays. Any, or all, fantrays in a system may be removed without bringing the system down provided at least one fantray per chassis is replaced within one minute.

3

Power Cycle the System Using Power Module Latches

The FX Series system has no **on/off** switch. If the system is powered using Power modules, their latches serve as the means to power cycle the system. After the system has shut itself down and powered itself off, restart it by opening and closing ALL power module latches.

The Power Daemon Takes Time to Complete Its Shutdown

When the power daemon (**powerd**) is stopped using `stopsrc -g ft` or `stopsrc -s powerd`, the SRC command returns immediately after telling the daemon to stop. The daemon process takes 10-15 seconds to shut down completely.

If you try to start the daemon immediately using `startsrc -g ft` or `startsrc -s powerd`, you see an error message:

```
Can't start multiple instances of powerd
```

Wait 10-15 seconds, or use `lssrc -s powerd` to verify that powerd has terminated before trying to restart the daemon.

Do Not Boot System with the Fantrays Removed

The FX Series system shuts itself down if both fantrays in a main or expansion chassis are removed. Do not reboot the system without replacing the fans. The system will shut itself down again after booting without the fantrays, however the system can be damaged by operating at too high of a temperature during the boot.

Boot System Carefully after Failure of All Power Modules

The FX Series system shuts itself down if all the power modules in a power chassis fail. Because it is unlikely for all modules to fail at the same time, you may wish to reboot the system to check out the state of the modules before replacing them.

Normally the power module batteries stay charged during and after system shutdown. If there is any chance they may not be fully charged, allow the power modules to recharge for 40 minutes before booting the system. The system brings all the power modules online and checks to see if they are working properly. If they are not working properly, the system should shut itself down again.

You must have at least one fully functional power module for the system to operate safely. The system may be able to boot with partially functioning power, but it is not safe to operate the system that way. Check the power modules by running pmftstat. The output looks like the following example:

```
>>>> Power Module (POWER-0 p1-f1 Available) [ 5.3 ] <<<<
Module LED: Inservice'ON' Outofservice 'OFF'
Alarms: Rack Alarm 'OFF'
Analog Switches: CurrA 'CLOSED' CurrB 'CLOSED'
Battery Load 'OFF' Battery Charger 'ON' Convertor 'ON'
Digital Inputs: AC 'OK' Temp 'OK' CurrA 'OK' CurrB 'OK'
Temp '48' C CurrA '4758' mA CurrB '4524' mA
Volts '55' V Batt '52' V
```

Make sure the following is true in your output:

❏ The two Analog Switches must be CLOSED.

❏ The Digital Inputs must all show OK.

❏ The Temp must be below 80C.

❏ The Volts must be greater than 52 V.

Boot System Carefully after Failure of All Fantrays

3

The FX Series system shuts itself down if both fantrays in a main or expansion chassis fail due to low fan speed or inability to maintain a low enough system temperature. Because it is unlikely for both fantrays to have a mechanical failure at the same time, you may wish to reboot the system to check out the state of the modules before replacing them. Make sure any overheating in areas in which the system operates is corrected first.

You must have one fantray working without fault for the system to run safely. The system should shut itself down after boot if both fantrays still have faults. If it does not, and the fans are not operating properly, shut the system down immediately and replace the fantrays.

Check the fan speeds and temperatures by running `pmftstat`. The output looks like the following:

```
>>>> Fan Tray Module (FANS-0 c1-t0 Available) [ 5.4 ] <<<<
Module LED: InService 'ON' OutofService 'OFF'
System LED: InService 'ON' OutofService 'OFF'
Telco LED: Critical 'OFF' Major 'OFF' Minor 'OFF'
Fan Speed: Fan#1 '2119' RPM Fan#2 '2119' RPM Fan#3 '2200'
RPM Fan Temp: '33' C
```

Normal fan speeds are in the range 1000-3300 RPM. The temperature must be below 60 C.

Known Problems on FX Systems

Overview

This section contains information on known problems with FX systems in this release of AIX 4.3.3. Workarounds or PTF numbers have been provided whenever they are available.

Existing MKSYSB Tapes May Fail to Install on FX Series Systems Running AIX 4.1.5

3

Problem

Existing mksysb tapes may fail to install on FX Series Systems that are running AIX 4.1.4 and AIX 4.15 and that have hard disks bigger then 2GB.

Workaround

1. Install the appropriate PTFs for your OS level:

   For AIX 4.1.4 systems:

Table 3-3. MKSYSB PTFs for AIX 4.1.4 on FX Series Systems

PTF Number	Fileset
M442020	bos.rte.bosinst 4.1.5.0
M442436	bos.sysmgt.sysbr 4.1.5.0
M457769	bos.rte.bosinst 4.1.5.4
M449725	bos.sysmgt.sysbr 4.1.5.4

   For AIX 4.1.5 systems:

Table 3-4. MKSYSB PTFs for AIX 4.1.5 on FX Series Systems

PTF Number	Fileset
M457769	bos.rte.bosinst 4.1.5.4
M449725	bos.sysmgt.sysbr 4.1.5.4

2. Rebuild your mksysb tapes.

Time Zone not Set on SYSNEW when using Split Mode to do a BOS-NEW Installation

3

Tracking Number

CPR 10213

Problem

When a BOS-NEW install is done on SYSNEW, the time zone is reset to the default CST time zone. While the time zone is not set, the time itself is set during the Split Mode Transition from SIMPLEX to SPLIT.

Workaround

Use the chtz command to set the appropriate time zone.

Loading and Unloading Kernel Extensions Leaks Memory

Tracking Number

CPR 10213

Problem

Kernel extensions, such as the pridd, leak a memory page when they are unloaded.

Workaround

Limit loads and unloads of kernel extensions.

Cannot Create split-notify.%-%.tmp File without Write Access to Current Directory

Tracking Number

CPR 10255

Problem

You cannot execute the spstart command in a directory to which you do not have write access because it writes a temporary file to the current directory.

Workaround

Run the command from a local directory to which you have write permissions.

File Systems Named "jfslog" are not Included in File System Listings

Tracking Number

CPR 11804

Problem

If a file system is named jfslog it will not be included in the list of file systems created by the splitstate utility.

Workaround

Do not use jfslog as a file system name.

CPU Reintegration Has Temporary Critical Fault Under Heavy Load

Problem

During CPU module integration the critical Telco alarm may come on. This occurs during the final CPU integration phase or the "critical integration" time. If the system is running an application mixture that results in modifications to large numbers of DRAM pages faster than the

system can copy them to the target CPU module, then the critical alarm may fire. This is a temporary alarm that the system automatically clears after the CPU module integration completes.

3

CPU module integration happens at boot time or as the net result of fault condition(s) that occur during system operations that eventually result in operator actions to re-integrate the CPU module(s).

Workaround

Perform CPU module integration when the system is less busy. There is no workaround if the CPU module must be integrated during a period when the application mixture is such that a large number of memory pages are modified more quickly than the system can copy them to the target CPU Module.

Making Split Mode State Changes while Booting Secondary System can Corrupt the Secondary Boot Record

Tracking Number

CPR 83297

Problem

Changing Split Mode states while the secondary system is booting can cause occasional boot record corruption on the secondary. This occurs when the savebase utility, run automatically by AIX during system startup, is interrupted by state-change activities. Problems have also been observed when changing states during firmware flash updates. To avoid problems related to these issues, do not make state changes using splitstate: (1) During a secondary system boot, until the secondary system has completely booted to a logon prompt, or (2) While firmware flash updates are in progress.

Workaround

To avoid problems related to these issues, do not make state changes during a secondary system boot, until the secondary system has completely booted to a logon prompt, or while firmware flash updates are in progress.

Logical Ethernet Devices May Be Unavailable after a Preservation Installation

Tracking Number

CPR 10181

Problem

During PRESERVATION installations, the operating system automatically configures logical Ethernet devices, whether or not they were configured on the system previously. Thus, it is possible that your system will have logical Ethernet devices defined but not accessible. While this situation should not interfere with standard operations, it will prevent the system from successfully transitioning from FT_START to the CHECKED state during Split Mode™ operations.

Workaround

Remove the extraneous logical Ethernet device:
`rmdev -dl ent`*X*
Where *X* is the number associated with the device.

Split AIX 4.1.5 Systems Cannot Be Upgraded to PPC750 CPUs

Problem

The CPUs on an FX system cannot be upgraded to PPC750 CPUs in Split Mode when the OS is at AIX level 4.1.5.

Workaround

Split-mode Upgrade Procedure

3

The following, is a list of steps to do a Split Mode upgrade when both the OS and the CPU are being upgraded but only one Split Mode upgrade is wanted.

Note   The "750" FX cpu refers to the cpus rated at 350 & 400 mHz.

Prior to the invocation of the splitstate command to actually split the system, it is assumed that the `/var/ft/split_cfg` file has been configured according to the desired system upgrade path.

1. `FT_START -> SPLIT` "Prepare system for OS Upgrade"

    This involves executing `spstart -S` to stabilize the system (i.e., let `autolvfix` run to break the mirrors), save the ODM database and reboot (based on the `g_UPGRADE` variable defined in `split_cfg`).

    Upgrading the CPU requires a reboot at this time.

Note   Due to the uncertainty of new CPUs being able to run on previous or current versions of the OS, it is not suggested that the Split Mode OS+CPU upgrade begin with the `FT_START->SIMPLEX` transition when it is known that SYSNEW must be booted on the currently executing OS.

Fallback is to `FT_START`.

2. `SPLIT -> SIMPLEX` "Replace SYSNEW CPU"

    Once the system has rebooted and is back at the FX-Bug prompt, go to the `SIMPLEX` state to swap the CPUs.

Note   There are only two places where CPUs can be upgraded during Split Mode: SIMPLEX and UNSPLIT. The SYSNEW CPU can only be changed at SIMPLEX, and the SYSOLD CPU can only be changed at UNSPLIT.

The reason for this is to make sure the CPUs are in the correct states during Split Mode upgrades. If a CPU is removed during any of the other Split Mode states (SPLIT through RESUMEDVGAPPS_SYSNEW inclusive), they will be in a state that might render them unusable as SPARES in other systems (unusable without additional manipulation of the CPUs).

3. SIMPLEX -> SPLIT "Install new OS on SYSNEW"

In this case, it is expected that the installation media can support the new hardware. Although, I presume it is reasonable to assume that, perhaps, a new OS could require further PTFs to support new CPU hardware.

Note   Since the new HW has been introduced, the system CANNOT be booted from the SYSNEW disks (i.e. the OLD OS).

After OS upgrade, validation of the new HW/SW would take place.

Fallback to SIMPLEX (and subsequently FT_START) is still possible at this point.

4. SPLIT -> RESUMEDVGAPPS_SYSNEW "Execute new system"

This transition is the same regardless of the upgrade path. Prior to moving to the RESUMEDVGAPPS_SYSNEW state, it is assumed that the upgrade has been validated as satisfactory.

Note   Fallback to SIMPLEX (and subsequently FT_START) is still possible at this point.

5. RESUMEDVGAPPS_SYSNEW -> UNSPLIT "Replace SYSOLD CPU"

The transition to UNSPLIT is where the SYSOLD CPU is replaced. To reiterate what was mentioned above, this is the only place where the SYSOLD CPU should be replaced.

Note   Fallback to a previous state is no longer possible. The only state change possible at this point is to `FT_COMPLETED`.

6. `UNSPLIT -> FT_COMPLETED`

Again, with other Split Mode upgrades, this finalize the upgrade and completes the process of remirroring devices, etc.

Notes   If the OS must be upgraded prior to the introduction of the new CPU, follow the instructions below.

Split Mode can handle this case, although the above procedure has to be modified (an extra step is required). Be aware the procedure above is not the only method to do this, but this modified procedure requires fewer steps than alternative steps.

7. To upgrade the OS prior to the new CPU, go to the `FT_START -> SIMPLEX`. This allows the old CPU to get its FW flashed to support the new OS. This step is unnecessary when the auto-FW update functionality is present (432B). An "updated-not-found-on-the-installation-media-FW" could be required, and this step could still be necessary.

8. The second transition is to complete the transition to `SPLIT` found in the step above (and to execute the necessary operations to prepare the system for OS upgrade). At this point, the OS upgrade would take place (as detailed in step #3 above with the exception that the OLD CPU is still present). Since it is presumed that the new OS still requires patches to support the new CPU (hence, the need for this modified procedure) the patches would also be installed at this point.

9. After the OS upgrade was complete, and the presumed patches needed to support the new CPU were added, the third transition--the "hop" back to `SIMPLEX` state (`SPLIT -> SIMPLEX`)--takes place here (this being step #2 above with the exception that SYSNEW already has its OS upgraded). The CPU is swapped out and, if necessary, new FW is flashed on the new CPU.

10. The fourth step now is to transition from `SIMPLEX` back to `SPLIT`. This is similar to step #3 above (the second transition to `SPLIT`), but

no OS upgrade would take place since that has already been accomplished. This transition immediately takes us to step #4 above and the Split Mode upgrade process can continue as before.

3

Split Mode Will Hang if the System Uses the Default Dump Partitions

Problem

Splitstate hangs setting dump partitions if the system uses the default dump partitions.

Note   The defaults set the primary partition to **/dev/sysdump0** and the secondary to **/dev/sysdumpnull**.

Workaround

Set the primary dump partition to **/dev/sysdump0** and the secondary to **/dev/sysdump1**.

The SCSI System has Problems with Interrupts Under Stress While Running on MFIO Modules

Problem

The driver misses interrupts under heavy use.

Workaround

None.

36G Drives Fail to Come Online at the End of a Split Mode Procedure

Problem

36G Drives fail to come online as they are being reintegrated back into the system at the end of Split Mode. This causes Split Mode to fail.

Workaround

None.

Modupgrade Command Cannot be used to Upgrade MFIOs to UMFIOs

Tracking Number

CPR 150563

Problem

The modupgrade command can automatically deal with a limited number of the decisions involved in changing from one disk size to another. For 36G drives, it does not support the changes needed if there are multiple disks in the volume groups.

Workaround

Upgrade from MFIOs to UMFIOs using the manual procedures, and change the type factors to hold the new disk drive sizes.

UMFIO Modules Will Not Come Online if Older Versions of X.25 are Installed

Tracking Number

CPR 150848

Problem

The software for configuring UMFIO modules does not properly handle versions of X.25 that do not support the UMFIO. If versions of the X.25 software earlier than 1.30 are installed on the system, the UMFIO module will not come online.

Workaround

If a sac device has been created on the UMFIO module, make sure its required condition is offline by using the modchange command. Then bring the module online.

X.25 Devices on a UMFIO Module Will Not Configure Properly

Problem

Files to support X.25 on the UMFIO are missing from the AIX4.3.3 CDs. X.25 on the SYNC modules is not affected.

Workaround

The two files **/usr/lib/rules/rules_x25** and **/usr/lib/rules/action_x25** are missing. In the **/usr/lib/rules** directory, copy **ruleftdev** to **rules_x25** and **actftdev** to **action_x25**.

Ethernet Driver Sees CRC and Underrun Errors on the UMFIO

Tracking Number

CPR 150558

3

Problem

> The ethernet driver sees CRC and underrun errors when running on the UMFIO module. These errors will not take the module offline, but do force retransmitting packets and reduce performance.

Workaround

> None.

Configuring the Ethernet Device can hang a NIM Install

Problem

> An ethernet configuration script expects operator input when it detects an unexpected location for a device. Input is not available during a NIM install.

Workaround

> Make sure the first available ethernet device is in **domain 0**.

The netpmon Command Fails to run when Installed on AIX 4.3.3

Problem

> The **netpmon** command fails to run on AIX 4.3.3 systems.

Workaround

> PTF: U466955 - perfagent.tools 02.02.0033.0011
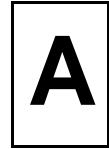
IBM Release Notes

Overview

Motorola's AIX 4.3.3 release is based on the corresponding release by IBM. This section contains the text of IBM's Release Notes for AIX 4.3.3, which may be useful as a baseline on the general features of the operating system.

IBM

AIX Version 4.3.3 Release Notes

Memorandum to: Licensees of AIX* Version 4.3.3

Subject: AIX Version 4.3.3

Date: August 23, 2000

Release Notes Version: 1.6

Enclosed is information about the AIX Version 4.3.3 Release. **Read this information before installing AIX Version 4.3.3**.

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* Indicates trademarks or registered trademarks of International Business Machines Corporation.

Contents

AIX Version 4.3.3 Release Notes

Introduction

AIX 4.3.3 Release Notes contains information that will aid you in the installation and migration to AIX 4.3.3. For information about new function for AIX 4.3.3, visit the RS/6000 software web page at:

```
http://www.rs6000.ibm.com/software
```

For information on new, changed, or removed functionality that was not available at the time of publication of the AIX documentation, and for additional information not documented in other publications, refer to the AIX 4.3.3 README at **/usr/lpp/bos/README** or to view the README in an HTML format, **/usr/lpp/bos/README.html**.

Some of the installation instructions in this document assume knowledge of:

- AIX system administration commands
- System Management Interface Tool (SMIT)
- Software installation operations, such as *apply* and *commit*

AIX Version 4.3 and the Year 2000

IBM continually tests its software products for Year 2000 Readiness. For information about IBM products and services in relation to the Year 2000 Issue, access the IBM Year 2000 Web site at:

```
http://www.ibm.com/IBM/year2000/
```

This site contains information about classes, an IBM Product Readiness Database, and the latest news and information from IBM on this topic.

Additionally, IBM recommends that users of AIX Version 4.3 periodically obtain the latest version of the AIX Year 2000 Workbook at:

```
http://www.software.ibm.com/year2000/papers/aixy2k.html
```

This will help provide that your AIX installation will have the latest updates and information for Year 2000 readiness.

AIX Version 4.3.3 Installation Documentation

This section lists the available AIX Version 4.3.3 installation documentation. Documentation may be available in the form of a book, online database, or both. When ordering a document, please mention the order number.

To order documentation, contact your point of sale, or, in the U.S., call IBM Customer Publication Support at 1-800-879-2755.

Order Number	Title
SC23-4112	AIX Version 4.3 Installation Guide
SC23-4113	AIX Version 4.3 Network Installation Management Guide and Reference
SC23-4111	AIX Version 4.3 Quick Installation and Startup Guide

For further information on AIX Version 4.3.3 documentation available, see the *AIX and Related Products Documentation Overview*, SC23-2456.

README Files

For information on how to view the README files for base operating system (BOS) software and optional software products, refer to the *AIX Version 4.3 Installation Guide*, SC23-4112.

Some README files are shipped in separate directories that are not accessible if you follow the procedure described in the *AIX Version 4.3 Installation Guide*. To find the README files installed on your machine, use the following command:

```
find /usr -name "*README*" -print
```

These notes should be used in conjunction with the AIX Version 4.3 Installation documentation.

Other Sources of Information

Installation Hints and Tips

The latest AIX 4.3.3 installation hints and tips can be obtained from:

- **The IBM FAX Information Server**

  Call 800-IBM-4FAX in the U.S. from any touch-tone telephone, or 415-855-4329 worldwide from your FAX machine, and request document number 8175.

- **The AIX Service Mail Server**

  Send electronic mail with a subject of **43_Install_Tips** to aixserv@austin.ibm.com.

Optional Software Information
Licensed programs include AIX 4.3.3 and optionally purchased products. Each program can have one or more separately installable filesets. The *Package Installation Database for Current Media* is an HTML database which contains information about the contents of these separately installable filesets. See "Viewing Information about Optional Software" on page 37 for instructions on viewing this online database.

How to Get Help and Report Problems
To report code-related problems, contact the Program Services representative for your area.

Installation

This chapter contains information about installing AIX Version 4.3.3 that supplements the information contained in the AIX Version 4.3 Installation documentation. Refer to the publications listed in "AIX Version 4.3.3 Installation Documentation" on page 5 for complete installation instructions.

Installing AIX Version 4.3.3

Note: If your are at AIX 4.3.0 are greater, use the command `smit update_all` to update to AIX 4.3.3.

There are three ways to install AIX Version 4.3.3:

- Complete overwrite install
- Preservation install
- Migration install

Boot from the product media and follow instructions in the *AIX Version 4.3 Installation Guide*, SC23-4112. We recommend that you do a migration install, if you are upgrading from a previous release of AIX. If you use preservation install, some configuration information will not be saved.

Installing AIX Version 4.3.3 on RS/6000 SP Systems

Before installing AIX 4.3.3 on RS/6000 SP systems, the following PSSP APARs must be installed so the SP switch will function correctly:

IY03104	PSSP 3.1.1
IY03103	PSSP 2.4.0
IY03102	PSSP 2.3.0

Installing AIX Version 4.3.3 on an Existing AIX Version 4.3 System

If you are updating a Version 4.3.0, Version 4.3.1 or Version 4.3.2 system, you must update and commit the **bos.rte.install** fileset prior to updating the rest of the system.

1. Insert the installation media and issue this command as root (where <DEVNAME> represents the device name of your installation device, for example, **/dev/cd0** (CD-ROM device), **/dev/rmt0.1** (tape device), or a directory where the **bos.rte.install 4.3.3.0** is available):

   `installp -acgXd <DEVNAME> bos.rte.install 4.3.3.0`

2. Update all additional currently installed software to the latest levels. Enter the following on the command line and accept the default menu values:

   `smit update_all`

3. If you updated from a Version 4.3.0 system, **reboot** immediately.

   If you updated from a Version 4.3.1 or 4.3.2 system, **reboot** as soon as possible.

   `shutdown -rF`

Recovery From Failed Upgrades with CD-ROM Media

If you upgraded using a CD-ROM device, the Pre-installation Failure/Warning Summary may have the following text:

```
Not found on the installation media
```

If so, you need to unmount the cd, and repeat the **update_all** step.

Please follow these steps:

1. Run the **mount** command to determine the mount point for the CD-ROM.

    For example:

    ```
    # mount
      node       mounted         mounted over     vfs     date          options
    -------- --------------- --------------- ------ ------------ ---------------
             /dev/hd4        /                jfs    Mar 23 13:04 rw,log=/dev/hd8
             /dev/hd2        /usr             jfs    Mar 23 13:04 rw,log=/dev/hd8
             /dev/hd9var     /var             jfs    Mar 23 13:04 rw,log=/dev/hd8
             /dev/hd3        /tmp             jfs    Mar 23 13:04 rw,log=/dev/hd8
             /dev/hd1        /home            jfs    Mar 23 13:05 rw,log=/d ev/hd8
             /dev/cd0        /.cd_fRlNMc      cdrfs  Mar 24 09:15 ro
    ```

2. Unmount the CD-ROM

    For example:

    ```
    # umount /.cd_fRlNMc
    ```

3. Reinvoke the **update_all** with the CD-ROM as the INPUT device.

    For example:

    ```
    smit update_all
    ```

Memory Requirements

AIX 4.3.3 requires a minimum of 32 megabytes of physical memory.

Initial Paging Space Requirements

AIX 4.3.3 requires the initial paging space (**/dev/hd6**) to be a minimum of 64 megabytes in size.

Disk Space Requirements

AIX 4.3.3 requires additional disk space for the same set of installed filesets due to the increased library sizes and additional function. If you are migrating from previous releases of AIX, refer to the following tables for disk space requirements.

Note: These measurements are not meant to be exact, they are meant to help you understand that additional disk space may be required on your system when you install or migrate to AIX 4.3.3.

Base AIX Install (graphical system with CDE)

	AIX 4.1.5 Allocated (Used)	AIX 4.2.1 Allocated (Used)	AIX 4.3.3 Allocated (Used)
/	4MB (1.8MB)	16MB (2.9MB)	4MB (2.5MB)
/usr	140MB (134.3MB)	156MB (143.5MB)	294MB (279MB)
/var	4MB (0.4MB)	16MB (0.9MB)	4MB (1.3MB)
/tmp	8MB (0.3MB)	16MB (0.5MB)	16MB (0.6MB)

Base AIX Install with Network Support, X11, CDE, and client bundle installed

	AIX 4.1.5 Allocated (Used)	AIX 4.2.1 Allocated (Used)	AIX 4.3.3 Allocated (Used)
/	4MB (2MB)	16MB (3.2MB)	8MB (4MB)
/usr	172MB (161.6MB)	192MB (170.2MB)	328MB (320MB)
/var	4MB (0.5MB)	16MB (0.9MB)	4MB (1.4MB)
/tmp	12MB (0.5MB)	16MB (0.7MB)	16MB (0.8MB)

AIX 4.3.3 with Network Support, X11, CDE after migration

	AIX 4.1.5 Allocated (Used)	**AIX 4.2.1** Allocated (Used)
/	4MB (3MB)	8MB (3.4MB)
/usr	320MB (284MB)	328MB (310MB)
/var	4MB (1.3MB)	4MB (1.3MB)
/tmp	16MB (0.7MB)	16MB (1.0MB)

AIX 4.3.3 with Network Support, X11, CDE, after update from AIX 4.3.2

	Product Media Allocated (Used)
/	8MB (4MB)
/usr	390MB (313MB)
/var	12MB (2MB)
/tmp	16MB (0.6MB)

Note: The filesets that are automatically installed have changed since AIX Version 4.1. That is, **bos.sysmgt.sysbr** (the **mksysb** fileset), **bos.sysmgt.nim.client**, and **bos.net.nfs.client** were not automatically installed in AIX 4.1, but are automatically installed in AIX 4.3.3. Some new filesets (like Java,[**] Web-based System Manager, and NetQuestion Web Server) are also automatically installed in AIX 4.3.3.

[**] Other company, product, and service names may be trademarks or service marks of others.

Multiple Volume CD-ROMs

AIX 4.3 has added multiple volume CD-ROMs. If you ask to install a fileset or a bundle of filesets, you may be prompted to insert another CD-ROM volume to complete the installation. If you do not wish to be prompted, or do not have the other volumes available, set the `Process multiple volumes?` field in SMIT or the Web-based System Manager to **no** (it is set to **yes** by default). If using the command line to call **installp**, specify the **-S** flag to not process multiple volumes. If the CD volume is already mounted as a filesystem at the time of the installation, multiple volume processing is disabled.

Note: You will *not* be asked to switch CD-ROMs during a Base (BOS) Installation of AIX. Multiple volume CD-ROMs are only enabled after the operating system has rebooted.

Network Install Manager (NIM) Enhancements - AIX 4.3.3

The Network Install Manager (NIM) has been enhanced to suppport Kerberos 4 (K4) authentication.

To use K4 authentication in an SP environment, you must install APAR IX88526. If this APAR is not installed, an invalid failure will be returned when a NIM master with K4 issues commands to a node without K4.

Other Installation Information

AIX Network Install Manager (NIM) README

The AIX Network Install Manager (NIM) includes a **README** file that is installed with the NIM Master **bos.sysmgt.nim.master** fileset. The path name of the file is **/usr/lpp/bos.sysmgt/nim/README**. The **README** file contains additional information about the AIX Version 4.3 NIM product.

License Use Management Runtime
Some of the products included in this release have been modified to use license management software. These products require a license password in order for you to use them. License Use Management Runtime for AIX is the new license management product. It is an enhancement to iFOR/LS included in AIX Version 4.1 and 4.2 and contains new license management functions, but still uses the same techniques and is completely compatible with iFOR/LS. For further information on License Use Management Runtime see *Using License Use Management Runtime for AIX* (SH19-4346).

Installing AIX 4.3 over AIX 4.1 or 4.2 with License Use Runtime Version 4 Installed

If you are using License Use Runtime Version 4 on AIX 4.1 or 4.2, and you upgrade to AIX 4.3, on the AIX installation menu, select **Migration Install**, not **Overwrite Install or Preservation Install**. This will maintain your license database and your configuration information.

Upgrading to a new Modification Level of AIX 4.3

If you are using License Use Runtime Version 4 on AIX 4.3, and you upgrade to a new modification level of AIX (for example, from AIX 4.3.1 to 4.3.3), use **smit** to upgrade. Choose **Install and Update Software**,

and then the **Install/Update From All Available Software** option. This will maintain your license database and your configuration information.

What Software Must You Install?

The following section specify which License Use Management Runtime filesets, and which other software, you need to install on the system.

Installing the License Use Runtime GUI on AIX 4.3.3

You have AIX 4.3.3 and you want to use the License Use Runtime graphical user interface. Install the following:

1. IPF/X Runtime Support. This is required if you install the backward compatibility GUI. This is in the package **ipfx.rte** that is shipped with the AIX installation media.

2. License Use Runtime Filesets: **ifor_ls.compat.cli.** and optionally, **ifor_ls.compat.gui**.

Note: If you installed the backward compatibility package on AIX 4.3.0, 4.3.1, or 4.3.2, and then you migrated to AIX 4.3.3, the backward compatibility package is automatically upgraded to the 4.3.3 level and you do not need to do any additional installation.

For more information about License Use Runtime please see the **/usr/opt/ifor/ls/os/aix/doc/readme.ark** file.

Some Licenses not Registered

Some applications, such as DB2 V5, register their product license using the License Use Management (LUM) Nodelock Administration Tool **/var/ifor/i4nat**. this tool is included in the LUM Compatibility fileset **ifor_ls.compat** which was shipped with AIX 4.3.2 as an option, but is *not* part of the base installation. Install this fileset before installing DB2 V5 on AIX 4.3.2 or higher, or attempting to upgrade a DB2 V5 demonstration license to a product license.

bos.content_list Fileset and the which_fileset Command

AIX 4.3.2 and higher include a new, optionally installable fileset, **bos.content_list**, that lists all installable files and the filesets/packages that contain them. The fileset includes one file, **/usr/lpp/bos/AIX_file_list**

The **bos.rte.install** fileset now also ships the **/usr/sbin/which_fileset** command, which allows you to search the **/usr/lpp/bos/AIX_file_list** file after **bos.content_list** is installed.

Enhanced Remote Access Node for RS232 and RS422 connections

The Enhanced Remote Access Node (RAN) for RS232 and RS422 connections is capable of a 2.4MB data transfer rate from the PCI 128 port adapter to the Remote Access Node (RAN). The adapter to RAN 2.4MB data rate can only be achieved when the entire line has Enhanced RANs installed. Mixing Enhanced RANs with RS232 and RS422 connections within a Line is permitted. A 128 port adapter has two lines (Line0 and Line1) each Line capable of configuring up to four RANs.

12

If Classic RAN(s) and Enhanced RAN(s) are installed on the same line, then the adapter to RAN speed must be set, through SMIT, to 1.2MB. Setting the adapter to RAN speed to 1.2MB diminishes maximum performance.

Creating or Modifying a 7135 RAIDiant Array for AIX LUN

When creating or modifying a Logical UNit (LUN), we do not recommend setting the **Reserve Lock** field to **NO** in a multiple host environment. Setting the **Reserve Lock** field to **NO** in a multiple host environment can expose the system to file corruption unless an application exists to coordinate access to the shared disk.

ARTIC960 Adapter

When running SNA Version 5.0 with the ARTIC960 adapter you may experience systems hangs or crashes. APARs IX82178 and IX82256 are available to fix these problems.

Welcome Center

The Welcome Center application as shipped on RS/6000 systems, has included within it a Java** Search applet that searches the Welcome Center files only when the Welcome Center is launched during the system reboot. Please note the following information about this function.

- When running the Welcome Center on a GXT150 class graphics adapter, the Java Search applet colors show blue on black which could be difficult to read.

- After you **login** to the Common Desktop Environment, you can run the Welcome Center by the icon in the Application Manager. In this environment, the Documentation Library search function will be launched instead of the Java Search applet discussed above.

- The search function is *not* provided in the ja_JP locale.

Migration

Sendmail update in AIX Version 4.3.3

AIX 4.3.3 runs Sendmail Version 8.9.3 which contains fixes, new configuration options, and Anti-Spam features. For more information about Sendmail, see the **/usr/lpp/bos/README** file.

Migrating from AIX 3.2.5/AIX 4.1.5 to AIX 4.3.3

Sendmail version 5.64 (supported on AIX version 3.2.5 and 4.1.5) and sendmail version 8.9.3 (supported on AIX 4.3.3) are not compatible. Sendmail 8.9.3 does not work with the version 5.64 **/etc/sendmail.cf** file. There is no script available to assist in migration of the version 5.64 **/etc/sendmail.cf** file to the version 8.9.3 **/etc/sendmail.cf** file.

During migration installation of AIX Version 4.3.3, the Version 5.64 sendmail files are saved in the following locations:

```
/usr/lpp/save.config/usr/sbin/sendmail
/usr/lpp/save.config/etc/sendmail.cf
/lpp/save.config/etc/sendmail.nl
```

The **/etc/aliases** file is not modified during the installation.

Migrating from AIX4.2.0/AIX4.2.1/AIX 4.3.0/AIX 4.3.2 to AIX 4.3.3

Sendmail version 8.7 (supported on AIX 4.2.0, AIX 4.2.1, and AIX 4.3.0) and sendmail version 8.8.8 (supported on AIX 4.3.2) and sendmail version 8.9.3 are somewhat compatible. The version 8.7 **/etc/sendmail.cf** file will work with the version 8.8.8 and version 8.9.3 sendmail binaries. The version 8.8.8 **/etc/sendmail.cf** file will work with the version 8.9.3 sendmail binary. However, each new version of **/etc/sendmail.cf** contains new rewrite rules, macros and options that are particular to the updated sendmail binary. So, if you choose to run the version 8.7 **/etc/sendmail.cf** file with the version 8.9.3 sendmail binary, you will lose some new features and functionality particular to version 8.9.3. You may wish to merge in the new options, macros, and rewrite rules. The new **sendmail.cf** file should have been saved in **/usr/lpp/save.config/etc/sendmail.cf.new**. You will have to merge this manually as there are no migration scripts to do this.

Migrating to the AIX Common Desktop Environment 1.0
This section provides information on moving to the AIX Common Desktop Environment (CDE) 1.0 from any version of AIX 3.2 or AIX 4.

Notes:

1. AIX Common Desktop Environment (AIX CDE) is the default desktop shipped with AIX 4.1.3 or higher.

2. AIXwindows Desktop is the default desktop shipped with AIX 3.2.x, 4.1.0, 4.1.1, and 4.1.2.

If, after migrating to AIX CDE 1.0 from AIXwindows desktop on AIX 4.1.1 or 4.1.2, you have problems with the desktop (for example, icons on the front panel do not execute properly, icons are missing, or actions can not be found), check that the following has been done:

1. The **X11.Dt.compat** fileset has been installed.

2. Action, data type, and front panel definitions in personal directories have been migrated to a valid format for AIX CDE 1.0.

An online help volume is provided to assist you in migrating to AIX CDE 1.0 from the AIXwindows Desktop. You can view this online help by selecting "Welcome to AIX CDE 1.0" from the Help Manager subpanel.

OpenGL, UMS or graPHIGS Migration

After migrating the OpenGL filesets some filesets may remain at the same VRMF level. For example, if you migrate from AIX 4.1.5 to AIX 4.3.2 and have all of the OpenGL filesets installed, the following filesets will not be migrated and their VRMF will not change:

```
Fileset name                          VRMF
-------------------------------------  -------
OpenGL.OpenGL_X.adt.doc                4.1.0.0
OpenGL.OpenGL_X.dev.pci.14104000.PPC   4.1.5.0
OpenGL.OpenGL_X.tools.glperf           4.1.0.0
```

This is expected and is not an indication that the migration was not successful or did not finish.

UMS Deinstalled on AIX 4.3 Migration Installs

When performing a migration install from any version of AIX 4.1 or AIX 4.2 toAIX 4.3, an existing UMS will be deinstalled. This is to prevent problems due to incompatibilities between the UMS X11R5 XVideo Extension and the AIX X11R6 Xserver contained in AIX 4.3. After the migration install, the user must re-install UMS, including the **UMS.video_ext** package containing the X11R6 version of the UMS XVideo Extension, from the AIX 4.3 Bonus Pack CDs.

AIX Version 3.2 to 4.3 Migration Problems

On some AIX Version 3.2 systems, the default install method is set as preservation (instead of migration). Check the default settings and select your desired method of installation from the **Change/Show Installation Settings and Install** panel. See "To Verify the Default Installation and System Settings" in the *AIX Version 4.3 Installation Guide,* SC23-4112-00, for additional information.

4.3.3.0 Install Media

Updates for some IBM products are included on the AIX 4.3.3.0 Install media. They are included because these products will not function correctly after updating to 4.3.3 without them. The products themselves are not included on the AIX media, and must be obtained/purchased separately.

If you try to install these updates and you do not have the product installed, you will see an error like the following:

```
Sample failure:
.........
Requisite Failures
------------------
SELECTED FILESETS:  The following is a list of filesets that you asked to
install.  They cannot be installed until all of their requisite filesets
are also installed.  See subsequent lists for details of requisites.

sysback.rte 4.1.3.1                     # AIX System Backup & Recovery
sysback.sbom 4.1.3.0                    # Sysback Offline Mirror Backu..

MISSING REQUISITES:  The following filesets are required by one or more
of the selected filesets listed above. They are not currently installed
and could not be found on the installation media.

sysback.rte 4.1.0.0                     # Base Level Fileset
sysback.sbom 4.1.0.0                    # Base Level Fileset

.........
```

This means that the updates cannot be applied without the base level product.

Firmware

The firmware in many of the PCI bus based RS6000 machines is limited in regards to the region of the hard disk from which it can read a boot image. This problem will not be encountered under most circumstances. The symptom of the problem is a failure to boot from hard disk, and a message from firmware similar to `unrecognized Client Program format`.

The affected machines can be identified most easily as the machines that provide access to the firmware System Management Services by means of pressing the F1 keys on the system attached keyboard, or the 1 key on a tty keyboard.

The problem is that the firmware on the affected machines cannot read the boot image from the hard disk if any part of the boot image resides past the 4 gigabyte boundary on the hard disk. This is not a problem for most customers because the AIX install process creates the boot logical volume at the beginning of the disk. This is achieved by using the **-a** flag with the **mklv** command and specifying **e** (which corresponds to **edge**) as the argument for the **-a** flag. Using the **mklv** command with this parameter results in the boot logical volume being created at the edge of the hard disk, and the resulting address that the firmware uses to read the boot image will be within a safe range. The AIX install process has always created the boot logical volume near the edge of the hard disk because that region of the hard has the slowest access time, and this allows other regions of the hard disk to be used by filesystems that can benefit from the better performance.

The only way that a customer can encounter this problem is by creating and initializing a new boot logical volume that extends past the 4 gigabyte boundary of the hard disk, either in part or in entirety.

16

In almost all cases, there is no need for a customer to create a new boot logical volume, but if they do, they should use the **lsvg** and **lslv** commands to verify that the newly created boot logical volume does not reside above the 4 gigabyte address on the hard disk.

An example of this calculation follows:

1. Execute **lsvg rootvg** to determine PP SIZE.

   On a 4.5 gigabyte hard disk,the default PP SIZE is 8 megabytes. Make a note of that size.

2. Execute **lslv -m bootlv00**

   Replace bootlv00 with the name of the newlycreated boot logical volume. The numbers in the second, fourth, and sixth columns indicate the physical partitions which have been assigned to the boot logical volume. If the PP SIZE is 8 megabytes, then the boot logical volume must not use any physical partition above 511. (512 * 8 = 4096, which is 4 gigabytes). Similarly, if the PP SIZE is 16 megabytes, then the boot image must not use any partition above 255, and if the PP SIZE is 4 megabytes, then the boot image must not use any partition above 1023.

As a reminder, this problem will not happen unless the customer has created and initialized a boot image that resides above the 4 gigabyte boundary.

Base Operating System (BOS)

This chapter contains information about the base operating system (BOS).

AutoFS Compatibility

In the event that an administrator wants to use the old style **automount** rather than **AutoFS**, they need to set an environment variable before invoking **automount**. They should also ensure that any map parameters previously used by **automount** are passed to the **automount** command with the COMPAT_AUTOMOUNT variable set and exported.

/usr/bin/automount is now a script that looks for an environment variable COMPAT_AUTOMOUNT. If COMPAT_AUTOMOUNT is set to any value, old version of **automount** is used and it now runs as **/usr/sbin/compat_automount**.

bos.perf.pmr Deleted

The **bos.perf.pmr** fileset is deleted. The function from this fileset is available in the **perfagent.tools** fileset. See the **pprof** man page for more information about the new options and syntax.

The **pmr** script files are avalable from the www.ibm.com Web site. To download these files, do the following:

1. In the `Search` window, enter `perfpmr`, and and select `Go` or press the Enter key.

   The query will return the Search results: `AIX Performance PMR Data Collection Scripts - perfpmr`.

2. Select `Download` to go to the **perfpmr** download site.

Disk Input/Output History - AIX 4.3.3

To improve performance, the collection of disk input/output statistics has been disabled. To enable the collection of this data, enter the following command:

```
chdev -l sys0 -a iostat=true
```

To display the current settings, enter the following command:

```
lsattr -E -l sys0 -a iostat
```

If the collection of disk input/output history is disabled, the first disk report of **iostat** output displays the message `Disk History Since Boot Not Available` instead of disk statistics. As before, subsequent interval reports generated by the **iostat** command contain disk statistics collected during the report interval. See the **iostat** command for more detailed information about **iostat**.

Improved Method for Reporting Disk I/O Wait Time

AIX 4.3.3 contains an improved method for computing and reporting the percentage of CPU time spent waiting on disk I/O (**wio**). For more information about this improvement, see the **/usr/lpp/bos/README** file.

Japan Kit - Fixed Fonts and Printers Support Integration

AIX 4.3.3 integrates various Japanese fixed fonts and printers support that was provided by a separate LPP (Japan Kit V2, 5607-E30, available only for Japan). AIX 4.3.3 supports six sizes of Japanese fonts (6 point to 23 point). Italic and Bold deform fonts are also available for larger sized fonts (12, 17, and 23 point).

AIX 4.3.3 also provides additional standard parallel printer support for CANON LIPS4 and EPSON ESC/P Japanese printer data stream.

The following new filesets support this change:

```
printers.canlbp-A404F_JP.rte
printers.escpj84_JP.rte
printers.oki400ps2_JP.rte
printers.ibm-pages_JP.rte
printers.ibm5586_JP.rte
printers.ibm5588_JP.rte
printers.lips4_JP.rte
X11.fnt.deform_JP
```

Logical Volume Manager (LVM) Enhancements

The LVM enhancements allow commands **mklv**, **rmlv**, **splitlvcopy**, and **chlv** (except name change) to function in concurrent mode and the new options for **syncvg** (**-H -P**) that allow a faster concurrent **syncvg** require that all machines in the cluster be at AIX Version 4.3 These new functions should not be attempted in mixed release level environments. If your environment is a mixture of AIX 4.1 or AIX 4.2 and AIX 4.3 then you should abstain from trying these new functions until you obtain the following apars.

- IX70098 - V41 - clvmd should not varyoff VG for all NAK cases.

- IX70099 - V42 - clvmd should not varyoff VG for all NAK cases.

Otherwise the passive cluster nodes will varyoff the VG when the new functions are attempted.

If you wish to do **rootvg** mirroring you should use **mirrorvg** to setup the mirroring and **unmirrovg** to remove the mirroring. With these two commands the limitations on rootvg mirroring have been removed. The white paper "Mirroring the rootvg Volume Group for AIX 4" is therefore no longer valid with AIX 4.3 and should not be followed.

LVM supports striped logical volume with mirrors. This feature further enhances data availability because one failing disk in a striped mirror copy does not bring down the entire copy. The remaining (working)

disks in the striped mirror copy continue to service striped units on those disks. Although the striped units on the failed disk are inaccessible, the mirrored copies of these units are available from another mirror. In this case, users are unaware that a disk is unavailable. When only the partitions are synchronized on a replacement disk, use the **migratepv** or **replacepv** command

A new partition allocation policy (Super Strict) is supported. This policy prohibits partitions from one mirror from sharing a disk with a second or third mirror.

Note: Super Strict policies and mirroring and striping are not supported on AIX releases prior to AIX Version 4.3.3. You cannot import volume groups to AIX Version 4.3.2 and lower if the volume groups include Super Strict policies or mirroring and striping functions.

A new command (**replacepv**) combines all the LVM steps required to replace one disk in a volume group with a new disk.

Performance enhancements were made to the following commands to improve the time needed for them to complete: **importvg**, **exportvg**, and **migratepv**.

mksysb on CD

AIX 4.3.3 contains a new function that allows you to create a backup of your system on a recordable CD drive (CD-R). For more information about this function, see the **/usr/lpp/bos.sysmgt/README.mkcd** file.

Multi-volume support is not available in 4.3.3.0: it will be distributed as a fix. See APAR IY02960 for details.

Malloc Multiheap Enhancement

In AIX 4.3.3, the Malloc subsystem includes an optional "multiheap" capability which allows users to enable multiple "heaps" of free memory. This is an enhancement to the single heap free memory pool which is provided in the default Malloc subsystem.

For more information about Malloc, see the **/usr/lpp/bos/README** file.

Malloc Debug Enhancement

In AIX 4.3.3, the Malloc subsystem includes an optional debug capability which allows users to identify memory overwrites, overreads, duplicate frees, and reuse of freed memory allocated by Malloc.

For more information about Malloc, see the **/usr/lpp/bos/README** file.

nfso Command - Option Changes

The following information about some of the **nfso** command option values replaces the information about these same values in the AIX 4.3.3 documentation.

nfs_max_read_size	Sets the maximum and preferred read size for NFS Version 3 servers. The default size is 32,678 bytes. The maximum is 65,536 bytes and the minimum is 512 bytes. NFS clients mounting after nfs_max_read_size is set must use its set value. You cannot use this option to change the size existing mounts.
	Using nfs_max_read_size may require you to reduce the V3 read/write sizes when the mounts cannot be manipulated directly in the clients, especially during NIM installations on networks dropping packets with default read/write sizes of 32K. In this case, set the maximum size to a small value.
nfs_max_threads	Specifies the maximum number of **nfsd** threads allowed on an NFS server. In AIX Version 4.3.2 and later versions, the default maximum is 3891. In some systems which have been upgraded by migration installation, the system administator may need to manually incrase this maximum value. This value can also be passed as an argument to the **nfsd** command. The specified value overrides the default. Re-running the **nfso** command to set **nfs_max_threads** overrides the previously set value. This option only applies to AIX Version 4.2.1 or later.
	In AIX Version 4.2.1, the NFS server is multi-threaded. Threads are created as demand increases on the server. When the threads are idle, they exit, thus allowing the server to adapt to the needs of the NFS clients. Assuming that NFS serving is the system's primary purpose, setting a large maximum does not detract from overall system performance because the NFS server creates threads as needed. However, if you want to use the system for other activities, you should specify a low value for **nfs_max_threads**.
nfs_max_write_size	Sets the maximum and preferred write size for NFS Version 3 servers. The default size is 32,678 bytes. The maximum is 65,536 bytes and the minimum is 512 bytes. NFS clients mounting after **nfs_max_write_size** is set must use the set value. You cannot use this option to change the size for existing mounts.
	Using **nfs_max_write_size** may require you to reduce the V3 read/write sizes when the mounts cannot be manipulated directly in the clients, especially during NIM installations on networks dropping packets with default read/write sizes of 32K. In this case, set the maximum size to a small value.
nfs_server_clread	Allows the NFS server to be very aggressive about reading a file. The NFS server can only respond to the specific read request from the NFS client. However, the NFS server can read data in the file which exists immediately after the data for the current read request. This action is commonly called read-ahead. The NFS server performs read-ahead by default. Enabling the **nfs_server_clread** option causes the NFS server to be very aggressive when doing read-aheads for the NFS client. The default value for this option is 1 (enabled). A value of 0 sets the normal system default for the read-ahead methods.

Perl - AIX 4.3.3

The following Perl filesets are shipped with AIX: **perl.rte 5.5.3** (version 5.005_03) and **perl.man.en_US**. The **perl.rte** fileset will be installed automatically.

IBM will continue to update perl to the next stable release as new versions of AIX are shipped; however, IBM will not support perl.

For more information about perl, see the following Web site:

`http://www.perl.org`

pthreads Library Environment Variables

In AIX 4.3.3, three new environment variables were added which affect how the **pthreads** library maintains lists for the debugger.

For more information about **pthreads** environment variables, see the **/usr/lpp/bos/README** file.

System Trace Macro Enhancements

The following set of system trace macros was enhanced to trace up to five 64-bit parameters: **TRCHKL1**, **TRCHKL2**...**TRCHKL5T**. The function of these macros is unchanged for 32-bit applicaitions.

wlmcntrl Command Correction

The description of the **-u** flag for the **wlmcntrl** Command is incorrect in the AIX 4.3.3 documentation.

Use the following information for the *-u* flag:

-u   Update: request to change the limits and/or shares of the active classes. Classes cannot be added or
           removed this way.

Print Subsystem Changes

The location of the device file for HP JetDirect attached printers changed between AIX Version 3 and Version 4. In AIX Version 3, the device file resided in the **/var/spool/lpd/pio/dev** directory. In AIX Version 4, this device file has moved to the **/var/spool/lpd/pio/@local/dev** directory.

Having the device file reside in a different directory will cause problems for existing HP JetDirect queues after an upgrade from AIX Version 3 to Version 4. Because the **/etc/qconfig** file is user configurable, it is not modified during an AIX upgrade.

To allow the HP JetDirect queues to work after an upgrade, the **/etc/qconfig** file must be edited to indicate the new pathname for a device file. Any existing HP JetDirect queue must have the directory **@local** inserted between the **pio** and **dev** directories for the **file** entry of the queue as shown in the following example.

This is an HP JetDirect queue on an AIX Version 3 system:

22

```
netps:
device = hp@server
hp@server:
file =
/var/spool/lpd/pio/dev/hp@server
header = never
trailer = never
access = both
backend = /usr/lib/lpd/pio/etc/piojetd server
```

To allow this queue to work after an upgrade to AIX Version 4, change the **file =** line for the queue to the following:

```
file =
/var/spool/lpd/pio/@local/dev/hp@server
```

Parallel Printer Cable Selection

The parallel printer cable must be changed to a cable that is IEEE1284 compliant if the following is true:

- your system was manufactured since 1998
- *and* the printer is "parallel attached"
- *and* the attached printer is *not* a dot-matrix printer.
- *and* the output of the **lsdev -C -l ppa0** command contains the word IEEE1284.

If the output of the **lsdev** command above contains the word Standard, or the printer is a dot-matrix printer, an IEEE1284 compliant cable *is not* required.

Cables that are not IEEE1284 compliant may not properly transmit data to high speed printers and loss of printer data may occur, because the cables may not be capable of transmitting data at rates that are possible with newer ECP parallel ports.

Communications, Networking and I/O

This section contains information about communication, network, and I/O related topics.

Etherchannel

Etherchannel[**] is an aggregation technology that ships with AIX 4.3.3. With Etherchannel, you can produce a single large pipe by combining the bandwidth of multiple ethernet adapters. The aggregated pipe appears to be a single ethernet interface to the upper layers (e.g., IP). Each ethernet adapter shares a single MAC address. There is a single ethernet interface and a single IP address for the aggregated pipe.

For more information about Etherchannel, see the **/usr/lpp/bos/README** file.

gated Compatibility

The new **gated**, in **/usr/sbin**, uses a different syntax from the old version. Therefore, the **gated** configuration file in **/etc/gated.conf** should not be used. There is a sample **gated.conf** file in **/usr/tcpip/samples** that contains the correct syntax for the new version, and should be used as a guide for configuring **gated** in this release.

In AIX 4.3.3, the network option **udp_pmtu_discover** and **tcp_pmtu_discover** have a default value of 1. This enables path MTU discovery. Path MTU may cause problems for users running **gated** in environments where dynamic routing changes are expected to become effective quickly throughout the network.

If you experience problems when running **gated**, you can disable path MTU discovery by using the following commands:

```
no -o udp_pmtu_discover=0
no -o tcp_pmtu_discover=0
```

To make this change permanent, add the commands to your **/etc/rc.net** file.

Network Terminal Accelerator

Network Terminal Accelerator is not supported on AIX Version 4.3.

7135 RAIDiant Array for AIX requirements (when upgrading to AIX 4.3)

Customers upgrading systems with attached 7135-110 or 7135-210 Raidiant Array subsystems to AIX 4.3 must also obtain and install the latest version of controller and drive microcode. This microcode update can be obtained using hardware service channels (800-IBM-SERV in the U.S.) by requesting ECA 010. A new publication for the 7135, containing information on microcode and device driver installation, should also be ordered. This publication is titled *7135 Raidiant Array for AIX: Installation Guide and Reference*, SC23-1742.

24

Interface Specific Network Options (ISNO)

Prior to AIX 4.3.3, several key network options had a single global default value. This made it very difficult to tune a system that has widely differing network adapters. Some applications are capable of setting their own options (overiding the defaults), but most of these applications only allow a single setting and this again does not work well with different network adapters.

AIX 4.3.3 provides a feature called Interface Specific Network Options (ISNO). This feature can be enabled (the default) or disabled by setting the **no** option (**use_isno**) to 1 or 0.

For each network interface, five new parameters have been added; **rfc1323**, **tcp_nodelay**, **tcp_sendspace**, **tcp_recvspace**, and **tcp_mssdflt**. These correspond to the same values in the **no** options.

If these values are set for a specific interface, then they will override the system **no** default value. This allows different network adapters to be tuned for the best performance.

These values can be displayed via the **lsattr -E -l** *interface* command. They can be changed via the **chdev -l** *interface* **-a** *attribute=value* command. For example, `chdev -l en0 -a tcp_recvspace=65536 -a tcp_sendspace=65536` sets the **tcp_recvspace** and **tcp_sendspace** to 64K for **en0** interface. Using the **chdev** command will change the value in the ODM database so it will be saved between system reboots. If you want to set a value for testing or temporarily, use the **ifconfig** command. For example, `ifconfig en0 hostname tcp_recvspace 65536 tcp_sendspace 65536 tcp_nodelay 1` sets the **tcp_recvspace** and **tcp_sendspace** to 64K and enables **tcp_nodelay**.

These values are also displayed via the **ifconfig** *interface* command.

inetd.conf Migration

When you complete your migration, the **tftp**, **ftp**, **telnet**, **shell**, **login**, and **exec** services defined in **/etc/inetd.conf**, may be enabled to run, even if they were disabled in the previous release.

Socks5 and Related Information - Corrections and Additions

Please note the following corrections and additions to the AIX 4.3.3 documentation.

connect Subroutine

- **Library**

  Standard C Library (**libc.a**)

- **Syntax**

  `int connect` (*Socket, Name, NameLength*)

- **Description**

  The last sentence under the last bullet should read as follows:

Permissions are determined by the **umask** value of the process that created the file.

socks5_getserv Subroutine

- **Syntax**

  ```
  struct sockaddr *socks5_getserv (Dst, DstLen)
  ```

- **Description**

  The **socks5_getserv** subroutine determines which (if any) SOCKSv5 server should be used as an intermediary when connecting to the address specified in *Dst*.

  The returned address may be IPv4, IPv6 or some other family. Check the address family before using the returned data.

- **Return Values**

  Upon successful lookup, the **socks_getserv** subroutine returns a reference to a sockaddr struct.

  If the **socks5tcp_connect** subroutine is unsuccessful in finding a server, a value of NULL is returned. If an error occured, an error code indicating the generic system error is moved into the **errno** global variable.

- **Examples**

  The following program fragment illustrates the use of the **socks5_getserv** subroutine by a client to request a connection from a server's socket.

  ```
  struct sockaddr_in6 dst;

  struct sockaddr *srv;
  .
  .
  .
  srv = socks5_getserv((struct sockaddr*)&dst, sizeof(dst));

  if (srv !=NULL) {

      /* Success: srv should be used as the socks5 server */

  } else {

      /* Failure: no server could be returned. check errno */

  }
  ```

- **Related Information**

  The **socks5tcp_connect** subroutine, **socks5tcp_bind** subroutine, **socks5tcp_accept** subroutine, **socks5udp_associate** subroutine, **socks5udp_sendto** subroutine, **/etc/socks5c.conf** file, and **connect** subroutine.

socks5tcp_accept Subroutine

26

- **Parameters**

  Svr

  If non-NULL, specifies the address of the SOCKSv5 server to use to request the relayed connection; on success, this space will be overwritten with the server-side address of the incoming connection.

- **Error Codes (placed in socks5_errno; SOCKSv5-specific errors)**

  S5_ENOSERV

  No server found.

- **Examples**

  The following program fragment illustrates the use of the **socks5tcp_accept** and **socks5tcp_bind** subroutines by a client to request a listening socket from a server and wait for an incoming connection on the server side.

  ```
  struct sockaddr_in svr;
  struct sockaddr_in dst;
  .
  .
  .
  socks5tcp_bind(s, (struct sockaddr *)&dst, sizeof(dst), (struct sockaddr *)&svr, size
  .
  .
  .
  socks5tcp_accept (s, (struct sockaddr *)&dst, sizeof(dst), (struct sockaddr *)&svr, size
  ```

- **Related Information**

  The **socks5tcp_connect** subroutine, **socks5tcp_bind** subroutine, **socks5udp_associate** subroutine, **socks5udp_sendto** subroutine, **socks5_getserv** subroutine, **/etc/socks5c.conf** file, **accept** subroutine, **bind** subroutine, **getsockname** subroutine, **send** subroutine, and **socket** socket.

socks5tcp_bind Subroutine

- **Purpose**

  Connect to a SOCKSv5 server and request a listening socket for incoming remote connections.

- **Syntax**

  ```
  struct sockaddr *Dst;
  size_t DstLen;
  ```

- **Description**

  The **socks5tcp_bind** subroutine requests a listening socket on the SOCKSv5 server specified in *Svr* in preparation for an incoming connection from a remote destination specified by *Dst*. Upon success, *Svr* will be overwritten with the actual address of the newly bound listening socket, and *Socket* may be used in a subsequent call to **socks5tcp_accept**.

- **Parameters**

Dst

Sepcifies the address of the SOCKSv5 server to use to request the relayed connection. Upon success, this space will be overwritten with the bound address on the server.

DstLength

Specifies the length of the address structure in *Dst*.

- **Error Codes (placed in Socks5_errno; SOCKSv5-specific errors)**

  S5_ENOSERV

  No server found.

- **Examples**

```
struct sockaddr_in svr;
struct sockaddr_in dst;
.
.
.
socks5tcp_bind(s, (struct sockaddr *)&dst, sizeof(dst), (struct sockaddr *)&svr, size
```

- **Related Information**

  The **socks5tcp_accept** subroutine, **socks5tcp_connect** subroutine, **socks5_getserv** subroutine, **/etc/socks5c.conf** file, **accept** subroutine, **bind** subroutine, **getsockname** subroutine, **send** subroutine, and **socket** subroutine.

socks5tcp_connect Subroutine

- **Error Codes (placed in socks5_errno; SOCKSv5-specific errors)**

  S5_ENOSERV

  No server found.

- **Related Information**

  The **socks5_getserv** subroutine, **/etc/socks5c.conf** file, **connect** subroutine, **accept** subroutine, **bind** subroutine, **getsockname** subroutine, **send** subroutine, and **socket** subroutine.

socks5udp_associate Subroutine

- **Error Codes (placed in socks5_errno; SOCKSv5-specific errors)**

  S5_ENOSERV

  No server found.

- **Related Information**

  The **socks5udp_sendto** subroutine, **socks5_getserv** subroutine, **/etc/socks5c.conf** file, **connect** subroutine, **accept** subroutine, **bind** subroutine, **getsockname** subroutine, **send** subroutine, and **socket** subroutine.

28

/etc/socks5c.conf File

- **Description**

  port

  If specified, indicates the port to use when contacting *server*. If not specified, the default value, 1080, is assumed.

  Note: *server* addresses in IPv6 format *must* be followed by a port number.

- **Related Information** The **socks5tcp_connect** subroutine, **socks5tcp_bind** subroutine, **socks5tcp_accept** subroutine, **socks5udp_associate** subroutine, **socks5_getserv** subroutine, and **connect** subroutine,

TCP Selective Acknowledgement (SACK)

TCP SACK is available in AIX 4.3.3 and beyond. It is described in detail in RFC 2018, *TCP Selective Acknowledgement Options*. SACK allows TCP to recover from multiple losses within the window in lossy networks and internetworks.

By default, SACK is disabled. To enable it, enter the following command:

```
/usr/sbin/no -o sack=1
```

Graphics

This section contains information about graphics software.

Enhancements - AIX 4.3.3

graPHIGS and OpenGL are enhanced for AIX 4.3.3.

For information about the graPHIGS enhancements, see the **/usr/lpp/bos/README** file.

For information about the OpenGL enhancements, see the **/usr/lpp/OpenGL/README** file.

aixterm Support

aixterm has not been enhanced to support locales for Thai or Vietnamese, or any of the new UTF-8 locales added in AIX 4.3.2. Please use **dtterm** for these locales.

X11R5/X11R6.3 Compatibility Issues On AIX Version 4.3

The AIX 4.3.0, AIX 4.3.1, and AIX 4.3.2 X server is upgraded to the X Consortium release 6 version of X (commonly known as X11R6.3). The libraries are upgraded to X11R6.3, as well. These libraries are backward-compatible such that the broad majority of applications work as on previous releases of AIX. For maximum customer flexibility, compatibility options for X11R3, X11R4, and X11R5 libraries are also shipped

Applications which utilize the loadable extension facility provided by the X server may need to change. The X server allows the addition of new functionality through its extension mechanism. For each extension, part of the extension is loaded into the X server before it can be executed. X11R6.3 has modified how this mechanism works in the course of improvements to X, and it is this part of the extension that must be made compatible with X11R6.3 to execute properly. All of the extensions that are supplied are compatible and execute properly. In some circumstances, including the following, a customer may have an extension that will not work with X11R6.3:

- A customer has a sample extension downloaded from the X Consortium ftp site

- A customer develops his own extension

- A customer uses a third party extension.

In these cases the extension needs to be made compatible with X11R6.3 before it executes properly. Customer-developed extensions and sample X consortium extensions need to be recompiled with the X11R6.3 environment. For third party extensions, the customer should contact the vendor for a X11R6.3 compatible update.

Customers using non-IBM display adapters may also be using vendor-supplied software specific to those devices, which uses X11R6.3 Server capabilities. If so, this software must be made compatible with

X11R6.3 to operate properly. The customer should contact the particular vendor of the display adapter for this software.

An AIX Version 4.3 porting guide and the information on "The Developers Connection" CD provides assistance to customers and vendors developing adapters or extensions for AIX.

graPHIGS for AIX 4.3

graPHIGS applications which run Distributed Application Processes (DAPs) may need to change. By default on AIX 4.3, DAPs run with the new X11R6 libraries. If a DAP requires X11R5 libraries for any reason, the user may use a new flag, **-r5**, with the **gPinit** command as follows:

```
gPinit -a -r5
```

The **-a** flag allows for DAP execution and has not changed.

If the **-r5** flag is used, then all DAPs run as X11R5 clients. By default, DAPs and the graPHIGS remote nucleus run as X11R6 clients in AIX Version 4.3.

The **-r5** flag is useful for DAPs that depend on X11R5 functionality which no longer exists in X11R6 (for example, **XAsyncInput()**).

If the following message is observed while running a X11R5 DAP, then restart the graPHIGS remote nucleus with the **-r5** flag in addition to the **-a** flag.

```
WARNING: The XAsyncInput API is no longer implemented in X11R6.
```

Shared Segment Enhancements - AIX 4.3.3

Changes to the graphics subsystem reduced the number of segments used by a graPHIGS or OpenGL environment, provide more segments for the application, and allow applications to process larger models.

For more information about how these changes affect graPHIGS, see the **/usr/lpp/bos/README** file.

For more information about how these changes affect OpenGL, see the **/usr/lpp/OpenGL/README** file

Ultimedia Services for AIX

Customers upgrading to AIX 4.3.3 on systems with either the GXT2000P or GXT3000P graphics adapter must run the **smit update_all** command using the AIX 4.3.3 Bonus Pack CD to upgrade **UMS.objects** to version 2.2.1.5 or later. Please see the AIX Version 4.3.3 Bonus Pack Release Notes for detailed instructions.

Documentation

This chapter contains information about documentation changes.

Installation and Configuration

If you have a system that supports a GUI (Graphic User Interface) and are running in the X-Windows System, you can use the Configuration Assistant to install and configure the library service, or you can use the manual method. It is highly recommend that you use Configuration Assistant since it will automatically perform some steps for you and is easier to use. Configuration Assistant starts automatically at reboot after the system installation. Once you close Configuration Assistant, you can reopen it from the command line by entering: `configassist`

AIX Documentation Libraries

The AIX Version 4.3 documentation is contained on two compact discs:

- AIX Version 4.3 Base Documentation CD, contains the following types of documentation:

    - User guides

    - System management guides

    - Application programmer guides

    - Commands reference volumes

    - Files reference information

    - Technical reference volumes used by application programmers.

- AIX Version 4.3 Extended Documentation CD, contains the following types of documentation:

    - Adapter guide and reference books

    - Technical specifications describing industry standard functions

    - Technical reference volumes used by system programmers.

These CDs contain AIX and related products documentation designed for use with an HTML 3.2 web browser, such as the Netscape browser that is shipped with the AIX Version 4.3 Bonus Pack. The discs require a CD-ROM drive. A few documents in these libraries are in PDF format and must be viewed using the Adobe Acrobat Reader, Version 3.0.

Beginning with AIX Version 4.3.3, the Documentation Library Service allows users to navigate, read, and search registered HTML documents using their Web browser and the library application. The library application presents documents in a expandable-tree format that can be navigated by clicking on button controls in the tree. This action opens those documents for reading, and also allows users to search keywords using a search form present in the application. The Documentation Library Service searches for those words, and then presents a list of results that are linked to information contained in the online documentation files.

The documentation library service provides three types of Graphical User Interfaces (GUIs) to the user. They are as follows:

- The Global Documentation Library Service GUI. This GUI shows all documentation on the documentation server that has been registered with the Global GUI. This GUI can be accessed by the icons in the Help sub-panel in the CDE desktop.

- The AIX Documentation Library GUI. This GUI contains the AIX operating system manuals. This GUI can be accessed by the icons in the Help sub-panel in the CDE desktop.

- The application GUI. Applications can use the library to create GUIs that just show the manuals for that application. This type of GUI is typically launched from within the application. An example of this type of GUI is the extended help GUI that is launched from within the AIX Web Based System Management application.

Users can access the global library application by typing `docsearch` on the command line or by clicking the Documentation Library icon in the Help subpanel under the CDE Desktop front panel.

Note: IBM continues to ship **topnav.htm**. If you have a bookmark to **topnav.htm**, the links out of that navaigation model will continue to work; however, the header and footer links will take you into the Documentation Library Service, and you may not be able to get back to **topnav.htm**. If you try to open the AIX Version 4.3.3 Documentation Library using the AIX Library Documentation icon and you do not have AIX 4.3.3 documentation installed for the language you are using, you will be sent to a previous level 4.3 (e.g., 4.3.2) documentation navigation page. This page will let you navigate to any old level AIX manuals that may be installed.

The documentation information is made accessible by loading it onto the hard disk or by mounting the documentation CD in the CD-ROM drive. While mounting the CD saves on the amount of hard disk space used, it requires the CD be kept in the CD-ROM drive at all times. Also,searching the documentation from the CD-ROM drive can be significantly slower (in some cases up to ten times slower) than searching the information if it is installed on a harddisk.

You can install all of the AIX documentation from the AIX Version 4.3 Base Documentation CD and the AIX Version 4.3 Extended Documentation CD or you can selectively install pieces of the documentation. Some documentation may have previously been installed with the operating system or other licensed products. Run the **lslpp** command to find out which packages and filesets are already installed on your system.

See the *AIX Version 4.3 Installation Guide*, SC23-4112, for information about mounting the documentation CD-ROMs, installing documentation from these CD-ROMs, and configuring a documentation server.

Testing the Documentation Library Service

If you are not sure if the search service is installed and configured, enter the following command:

```
docsearch
```

You will see one of the following results or messages:

- The library application appears, with no error messages and the search form appears at the top of the page. This search form contains one or more fields where you can enter words you want to search for. There are documents visible in at least one of the views. Try opening a document to read it and then searching keywords to test the operation of the search function.

  If everything is working correctly, and you need to install some of the operating system manuals, go to "Installing the AIX Documentation" section of the *AIX Version 4.3 Installation Guide*.

  If the search fails, go to "Problem Determination" in the *AIX Version 4.3 System Management Concepts: Operating System and Devices*.

- `There are no documents installed for this view`. The library service may be installed, but the service cannot find any installed documents that are registered for the current view you are looking at. Try clicking on the other views to see if they contain documents. Once you find a view with documents, try reading and searching the documents.

  The library may be installed and configured correctly, but you cannot fully test the service until documentation is installed and registered. To install the operating system manuals go to "Installing the AIX Documentation" in *AIX Version 4.3 Installation Guide*. You may also install and register any other documents that register themselves with the library service. After you have done this, return to this section and retest the library functions.

- `Search is not enabled`. The service is not fully installed and configured. Go to "Installing the Documentation Library Service" in the *AIX Version 4.3 Installation Guide*.

- `Search is not supported in this language`. The search engine cannot perform searches in a language installed on the system. This is not an error. This message will always be visible when you are using this language.

- `Cannot find or execute ds_form`. The wording of this message varies. The search service is not installed and configured correctly. Go to "Installing the Documentation Library Service" in the *AIX Version 4.3 Installation Guide*.

- No browser appears. The search service is not installed and configured correctly. Go to "Installing the Documentation Library Service" in the *AIX Version 4.3 Installation Guide*.

For more information about the Documentation Library Service, see the **/usr/docsearch/README** file. This README file ships as part of the Documentation Library Service package on the first AIX CD.

Using the man Command

If you are interested in viewing reference information (on topics, such as commands, subroutines, and files) by using the **man** command, you must first install the AIX documentation. Go to "Installation and Configuration" section of this publication for more information.

Configuring the Language of the AIX Documentation

By default, documentation that is viewed by using the **docsearch** command or the CDE Desktop icons for the AIX Documentation or the Documentation Library appears in the same language as the current locale of the user's client computer.

However, you may want to see the documentation in some language other than the language of the system's or user's current default locale.

Starting in AIX 4.3.2, the documentation language can be changed for all users on a system, or it can be changed for a single user. The **chdoclang** utility program is available for configuring the language of the AIX Documentation.

Changing the Documentation Language for All Users

To change the default documentation language for all users, the system administrator, logged in as the user **root**, should run the following command:

```
/usr/bin/chdoclang locale
```

where *locale* is the locale specification of the desired documentation language. Running the command as **root** adds the following line to the system's **/etc/environment** file:

```
DOC_LANG=locale
```

where *locale* is the locale that is the new default documentation viewing and searching language. See the section **Available Languages for AIX Documentation Library** for the appropriate locale name to be used with the **chdoclang** command when configuring the language to be viewed when selecting the Documentation Library icon.

Note: If the users are using a remote documentation server, the DOC_LANG variable should be set on the user's client computer, not the remote server. Also, the language change does not take effect until the next time a user logs out and back into the computer.

For example, when a computer's default locale is English, a user sees English documentation when using the **docsearch** command or selecting the Documentation Library icon.

If the system administrator now wants all the users to see Japanese documentation instead of English, the administrator would enter the following command:

```
/usr/bin/chdoclang Ja_JP
```

which adds the following line to the system's **/etc/environment** file:

```
DOC_LANG=Ja_JP
```

A user logging out and then logging back in will now see Japanese documentation when using the **docsearch** command or selecting the Documentation Library icon.

Note: Before a computer can serve documents in a language, the AIX locale (language environment) for that language and the translated versions of the documents must also be installed on the documentation server.

Changing the Documentation Language for a Single User

A user may override their system's default documentation language by running the following command:

`/usr/bin/chdoclang locale`

where *locale* is the locale specification of the desired documentation language. Running the command as described above will add the following line to the user's **$HOME/.profile** file (when the Korn shell is the default shell of the user):

`DOC_LANG=locale; export DOC_LANG`

where *locale* is the locale that will be the new default documentation viewing and searching language. See the section **Available Languages for AIX Documentation Library** for the appropriate locale name to be used with the **chdoclang** command when configuring the language to be viewed when selecting the Documentation Library icon.

For example, when a user's default locale is Japanese, the user will see Japanese documentation when they use the **docsearch** command or select the Documentation Library icon.

However, suppose that the Japanese documentation is not installe whereas the English documentation is installed. To view the English documentation when the default locale is set to Japanese, the user would execute the following command:

`/usr/bin/chdoclang en_US`

which adds the following line to the user's **$HOME/.profile** file(when the Korn shell is the default shell of the user):

`DOC_LANG=en_US; export DOC_LANG`

A user logging out and then logging back in will now see English documentation when using the **docsearch** command or selecting the Documentation Library icon.

Note: Defining the DOC_LANG environment variable in a user's **$HOME/.profile** (or $HOME/.cshrc for C shell users) will take precedence over any global DOC_LANG setting in their system's **/etc/environment** file.

Also, CDE users must uncomment the "DTSOURCEPROFILE=true" line in the **$HOME/.dtprofile** file, which will cause the **$HOME/.profile** (or **$HOME/.cshrc** for C shell users) to be read during CDE login.

Available Languages for AIX Documentation Library

The AIX Base Documentation is currently available in a number of different languages. When configuring the documentation language using the **chdoclang** command, use the following locale specifiers:

Documentation Language	Locale specifier for the chdoclang command
Brazilian-Portuguese	pt_BR
Catalan	ca_ES
Czech	cs_CZ
English	en_US
German	de_DE
Hungarian	hu_HU
Japanese	Ja_JP
Korean	ko_KR
Polish	pl_PL
Russian	ru_RU
Spanish	es_ES
Traditional Chinese	Zh_TW

InfoExplorer

InfoExplorer is no longer a part of the AIX Base Operating System. In AIX Version 4.3, InfoExplorer is sold as a separate AIX feature. If you have applications or personal documentation that requires the InfoExplorer browser, contact your point of sale to order the InfoExplorer feature.

Migration installation to AIX 4.3 preserves non-AIX InfoExplorer documentation. Prior to installation of the InfoExplorer feature for 4.3, the **lppchk -v** utility will report that the required software to access the InfoExplorer documentation is missing.

Optional Software

This chapter contains information about optional software.

Viewing Information about Optional Software

Licensed programs include AIX 4.3 and optionally purchased products. Each program can have one or more separately installable filesets. Information about individual software products is available in HTML format. To view the software products information:

1. You must have installed an HTML Version 3.2 web browser, such as the one available on the AIX Version 4.3 Bonus Pack.

2. Install the Package Installation Database for Current Media software package (pkg_gd). The home page for the Package Installation Database for Current Media is located at:

```
/usr/share/man/info/en_US/a_doc_lib/aixins/inslppkg/toc.htm
```

3. When viewing the Package Installation Database for Current Media, check to see if there is migration information for the databases you want to install.

Installing NetWare

When installing NetWare for AIX on your system using a language other than English, do the following:

1. Type 'locale' at the system prompt.

2. Note the value of the **LC_ALL** variable.

3. Set the **LC_ALL** variable to **en_US** using the command:

   ```
   export LC_ALL=en_US
   ```

4. Install NetWare.

5. After installing NetWare, reset the **LC_ALL** variable to the original value noted in step 2.

SecureWay Directory V3.1.1 Lightweight Directory Access Protocol (LDAP)

SecureWay Directory LDAP is shipped with AIX 4.3.3 and runs on AIX Version 4.3.1 and above. The following information applies to this product.

SecureWay Directory LDAP Installation Considerations

Before installing the directory server, install just the **ldap.html.**_Lang_ package and carefully follow the installation instructions found in the Install/Configuration Guide (see the note below about accessing this guide). Install the **ldap.html.**_Lang_ by using SMIT or by running:

```
installp -acgXd /dev/cd0 ldap.html.en_US
```

from the AIX command line.

Note: When the Installation/Configuration Guide has been installed, use your local Web browser to view: **file:/usr/share/man/info/<LanguageTag>/ldap/config/aparent.htm**

Special Installation Instructions for LDAP If DB2 Is Already Installed

If you already have a version of DB2 installed, do not use the **Update Installed Software to Latest Level (Update All)** option with the LDAP and DB2 images packaged with AIX. This option might cause installation of a newer version of some of your existing DB2 file sets, but the resulting DB2 image might not be usable as a DB2 server. Instead, update your DB2 installation with the latest Fixpak that is available through the normal DB2 service channels prior to installing the LDAP server. DB2 FixPaks are available at:

```
http://www.software.ibm.com/data/db2/db2tech/version5.html
```

Note: A full installation of DB2 Version 6.1 requires up to 255 MB of disk space if installed with all options and all manuals for any one language.

SecureWay Directory LDAP Enhancements

SecureWay Directory is enhanced for AIX 4.3.3. See the following Web site for the latest information about this product:

`http://www.software.ibm.com/network/directory`

SecureWay Directory V3.1.1 Lightweight Directory Access Protocol (LDAP) is delivered through the following packages and filesets:

Package	Fileset	Description
ldap.server		SecureWay Directory Server
	ldap.server.rte	SecureWay Directory Server Runtime
	ldap.server.com	SecureWay Directory Server Framework
	ldap.server.admin	SecureWay Directory Server Administrative Interface
ldap.client		SecureWay Directory Client
	ldap.client.rte	SecureWay Directory Client Runtime
	ldap.client.adt	SecureWay Directory Client SDK
ldap.html._<Langd>_ See Note 1.		SecureWay Directory Documentation
	ldap.html._<Langd>_**.config**	SecureWay Directory Install/Config Gd - Langd
	ldap.html._<Langd>_**.man**	SecureWay Directory Man Pages - Langd
ldap.msg._<Langd>_ See Note 2.		SecureWay Directory Messages
	ldap.msg._<Langd>_	SecureWay Directory Messages - Langd

Note 1. _<Langd>_ stands for the following locales having documentation; however, some portions of the documentation may not be translated. Zh_CN, ca_ES, cs_CZ, de_DE, en_US, es_ES, fr_FR, hu_HU, it_IT, ko_KR, pl_PL, pt_BR, ru_RU, sk_SK, and zh_TW.

Note 2. _<Langd>_ stands for the following locales having message filesets. Ca_ES, De_DE, Es_ES, Fr_FR, It_IT, Ja_JP, Zh_CN, Zh_TW, ca_ES, cs_CZ, de_DE, en_US, es_ES, fr_FR, hu_HU, it_IT, ja_JP, ko_KR, pl_PL, pt_BR, ru_RU, sk_SK, zh_CN, and zh_TW.

Communications Server for AIX AnyNet Functions

Communications Server for AIX Version 5 nodes configured for either AnyNet APPC over IP or AnyNet Sockets over SNA will not start on AIX 4.3.3 using **sna.rte** levels earlier than **sna.rte 5.0.4.0**.

For failing levels, the **/etc/sna/sna.err** file will contain one of the following lines:

```
AnyNet component - /usr/lib/sna/drivers/tcppmm - failed to start.
AnyNet component - /usr/lib/sna/drivers/snapmm - failed to start.
```

Other SNA functions are not affected.

X.25 Migration and Configuration

The following information explains the procedures for migrating the AIXLink/X.25 LPP to version 1.1.5.

Note: The AIXLink/X.25 LPP version 1.1.5 is supported on AIX versions 4.1.5, 4.2.1, and 4.3.1 and higher.

Minimum Requirements for X.25 Migration

To perform a successful migration, you need to meet the following requirements:

- AIX Version 4.1.5, 4.2.1, or 4.3.1 or higher with required updates installed on the system or be migrating to AIX Version 4.1.5, 4.2.1, or 4.3.1 or higher.
- AIXLink/X.25 licensed product already installed on your system.
- All software and hardware requirements listed in Chapter 4, of the *AIXLink/X.25 LPP Guide and Reference, X.25 Installation and Configuration*.

Migration Procedures

The X.25 licensed program is delivered as an installable image. When migrating to AIXLink/X.25 Version 1.1.5 you must perform the following steps in order to save your X.25 configuration.

1. Use the **backupx25** command to save your system's X.25 configuration.

   Note: If you are migrating AIX at this time, you must backup your X.25 configuration to a filesystem which will be kept during in the AIX migration process then tar this file to a disk or other removable media.

2. Use the **removex25**
   to remove the system's X.25 configuration.

3. Use the **installp** command or SMIT to install AIXLink/X.25 Version 1.1.5

4. Use the **restorex25** command to redefine your system's X.25 configuration.

DCE/DFS Migration to AIX Version 4.3

Minimal Required Levels of DCE 2.1 on AIX 4.3: Some optional DCE 2.1 filesets must be installed at or above certain levels in order for DCE to be functional on AIX 4.3. The filesets and minimum levels are:

```
dce.client.dfs.rte          2.1.0.24
dce.dfs_server.rte          2.1.0.21
dce.dfsnfs.rte              2.1.0.11
dce.edfs.rte               2.1.0.19
```

These upgrades are necessary for the DCE Distributed File System to work on an AIX 4.3.2 or higher system. If DFS is started on an AIX 4.3.2 machine without these upgrades, the machine will experience network problems and may eventually crash.

For customers using the DCE Distributed File System (DFS) for AIX, migrating an existing AIX system to AIX 4.3 will automatically upgrade the following filesets if they exist on the system:

```
DCE Client Services                    dce.client.core.rte 2.1.0.26
DCE Security Services                  dce.security.rte    2.1.0.24
DCE DFS Client Services                dce.client.dfs.rte  2.1.0.24
DCE DFS Base Server                    dce.dfs_server.rte  2.1.0.21
DCE Enhanced DFS                       dce.edfs.rte        2.1.0.19
DCE NFS to DFS Authenticating Gateway  dce.dfsnfs.rte      2.1.0.11
```

If the automatic upgrades are not successful during the AIX 4.3 migration install, the AIX 4.3 system installation procedure will detect that the DCE filesets are not at the minimum required level for running on AIX 4.3. The installation procedure will move the existing **/etc/dce/rc.dce** file to **/etc/dce/rc.dce.downlevel** to prevent DCE/DFS from starting on the system.

If this happens apply the DCE PTF's from the AIX install media, then reboot the system. The **/etc/dce/rc.dce.downlevel** file can then safely be moved back to **/etc/dce/rc.dce** and DCE/DFS started on the system.

If you install DCE filesets after installing AIX 4.3, be sure to install the required minimum levels prior to configuring DCE on the machine.

The DCE/DFS images on the AIX CD 1 media are not LPP images, they are DCE/DFS updates that will be applied on machines where DCE/DFS is currently installed and the customer is migrating to AIX 4.3. The AIX install utilities may show them as possible install images but you cannot install DCE/DFS from these images. You have to install DCE from the media that DCE ships on and not the AIX CD 1 media.

Minimal Required Levels of DCE 2.2 on AIX 4.3: Some optional DCE 2.2 filesets must be installed at or above certain levels in order for DCE to be functional on AIX 4.3.2. or higher. The filesets and minimum levels are:

```
dce.client.dfs.rte          2.2.0.2
dce.dfs_server.rte          2.2.0.2
dce.dfsnfs.rte              2.2.0.2
dce.edfs.rte               2.2.0.2
```

These upgrades are necessary for the DCE Distributed File System to work on an AIX 4.3 system. If DFS is started on an AIX 4.3 machine without these upgrades, the machine may eventually crash.

For customers using the DCE Distributed File System (DFS) for AIX, migrating an existing AIX system to AIX 4.3 will automatically upgrade the following filesets if they exist on the system:

```
DCE Client Services                   dce.client.core.rte 2.2.0.2
DCE Security Services                 dce.security.rte    2.2.0.2
DCE DFS Client Services               dce.client.dfs.rte  2.2.0.2
DCE DFS Base Server                   dce.dfs_server.rte  2.2.0.2
DCE Enhanced DFS                      dce.edfs.rte        2.2.0.2
DCE NFS to DFS Authenticating Gateway dce.dfsnfs.rte      2.2.0.2
```

Also, beginning with AIX Version 4.2.1, the DCE Distributed File System (DFS) for AIX no longer supports the use of the DFS fileset backup and restore utilities with JFS filesystems exported to DFS

The DFS backup and restore utilities are:

- The fts commands (fts dump, fts restore)

- The DFS Backup System (the bak dump, bak restoredisk, bak restoreft, and bak restoreftfamily commands)

If you export JFS data to DFS from an AIX 4.2.1 or later system, the DFS commands to dump and restore this data will display the following message:

```
Error in <dump|restore>: The system call does not exist on this system
```

This will happen even if you are running the DFS commands on earlier versionsof AIX. What matters is the level of the AIX system on the DFS File Server where the data is being exported to DFS.

Use standard AIX backup and restore utilities to back up JFS data that is exported to DFS

Tivoli Management Agent (TMA), Version 3.2

The Tivoli Management Agent can be installed on your system now, or in the future, if it is to be a managed node within the Tivoli Enterprise Software suite.

The foundation for the Tivoli Enterprise Software product suite and third-party management products is the Tivoli Management Framework. This framework provides the graphical desktop, object-oriented databases, and base services used by other management products. TMA is a lightweight version of the Tivoli Management Framework for installation on client systems.

For more information about Tivoli Systems products and services, including how to become a Tivoli customer:

1. Call: 1-800-2TIVOLI (to be connected to your local sales office)

2. Visit the Tivoli Home page at: http:// www.tivoli.com

Installation

Install the Tivoli_Management_Agent.client fileset (400K).

Configuration

The installation process only copies files to the disk. See
/usr/lpp/Tivoli_Management_Agent.client/Readme.txt for configuration instructions.

Soft5080

Customers who wish to use Soft5080 with AIX 4.3.3 or 4.2.1 to perform 5080 emulation will need to apply APAR IX82499.

Service

Electronic Fix Distribution for AIX

Fixes on the Internet

IBM provides a number of mirrored sites on the Internet where you may freely download AIX-related fixes. While not every AIX-related fix is available, we are constantly adding more and more product fixes. These sites are anonymous FTP servers. Though we do not guarantee all fixes will be made available immediately, we usually update the servers within 24 hours after the fix is made available from our tape sites.

AIX fixes are mirrored at a number of sites around the globe to provide you faster downloads and redundancy in case you cannot reach your usual site. The servers are:

```
Canada           rwww.aix.can.ibm.com       204.138.188.126
Germany          www.ibm.de                 192.109.81.2
Japan            fixdist.yamato.ibm.co.jp   203.141.89.84
United Kingdom   ftp.europe.ibm.com         194.196.0.2
United States    service.software.ibm.com   198.17.57.66
```

Accessing the Fixes — World Wide Web, FixDist, and FTP

You can obtain fixes through any of three available interfaces. The primary interface is the World Wide Web. We have also developed a highly functional application called FixDist as a web alternative. It provides more discrete downloads and transparently delivers all required images with just one click. For those customers with only basic FTP access, you can use the anonymous login account to obtain these fixes.

Read more about these services at the following URL:

```
http://service.software.ibm.com/support/rs6000
```

Putting Fixes on Tape — TapeGen

If you need to get the downloaded fixes from your networked systems to a standalone system, you can use a utility called TapeGen. TapeGen is a service tool from IBM that enables you to create a stacked tape containing SMIT installable fixes. You create a stack file that lists all the images you want stacked onto a tape and TapeGen does the rest.

Read more about TapeGen at the following URL:

```
http://service.software.ibm.com/support/rs6000
```

Problem Solving Databases for AIX

Besides electronic fix distribution, IBM also provides searchable technical databases through the World Wide Web. Much of the technical information is available to customers with support contracts but we also provide a large assortment of technical information to any web user.

You can freely search AIX related bug reports and technical tips at the following URL:

`http://service.software.ibm.com/support/rs6000`

GI10-0697-06