

AIX 5L Version 5.2



# Release Notes



AIX 5L Version 5.2



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**Note**

Before using this information and the product it supports, read the information in Appendix B, "Notices" on page 33.

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# Chapter 1. Read This Before Installation

**Note:** *The updates to this document that are new since the printed version was distributed are signified with bold italic typeface.*

**Note:** AIX 5L Version 5.2 Release Notes contains information that will aid you in the installation of AIX 5L Version 5.2. To view the most current version of the Release Notes, go to the online Release Notes in the Information Center. The Information Center is located at the following Web address:

[http://publib16.boulder.ibm.com/pseries/en\\_US/infocenter/base](http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base)

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## Required Hardware

Only CHRP machines are supported.

As the root user run the following to see if you have a CHRP machine:

```
bootinfo -p
```

To find out more about supported and unsupported items, see Appendix A, “AIX 5L Version 5.2 Supported and Unsupported Items” on page 29.

## IBM eServer pSeries 690/670

### Required Levels of Firmware and HMC

AIX 5L Version 5.2 introduces the following new functions:

- Dynamic Logical Partitioning (DLPAR)
- Capacity Upgrade on Demand (CUoD)

If these functions are not used, there is no requirement for an upgrade of Platform Firmware or HMC when the Operating System is upgraded to AIX 5L Version 5.2.

If either DLPAR or CUoD functionality is required by the user, the Platform Firmware and HMC must both be upgraded. The required upgrade levels are:

- **Platform Firmware:** 10/2002 system firmware update or later. To determine your platform firmware level, do the following:
  1. At the command prompt, type:

```
lscfg -vp | grep -p Platform
```
  2. The last 6 digits of the ROM Level represent the Platform Firmware date in the format: “YYMMDD”.
- **HMC:** Release 3 Version 1.0

The order of the upgrades should be:

1. **The upgrade of Platform Firmware may cause some AIX Version 5.1 partitions to encounter problems when they reboot. To avoid these problems, apply APAR IY31961 on all AIX Version 5.1 partitions before upgrading Platform Firmware.**
2. **HMC:** See the *IBM Hardware Management Console for pSeries Installation and Operations Guide*.
3. **Platform Firmware:** Contact your IBM Customer Engineer.
4. **AIX:** See the *AIX 5L Version 5.2 Installation Guide* in the Information Center.

### Known Limitations

- In Full System Partition mode, only one graphics adapter and USB adapter with one keyboard and mouse are allowed per system. Only one graphics adapter and USB adapter with one keyboard and mouse are allowed per logical partition, and maximum of 8 logical partitions which have a graphics adapter and USB adapter are allowed.

## Some AIX Systems May Not Boot From CD-ROM

Some AIX systems may not boot from CD-ROM because of firmware issues. To determine if your system will be affected by this problem, do the following (before migrating or installing a running 4.3 or 5.1 system):

1. At the command prompt, type:

```
lscfg -vl cd*
```

2. Examine the data that is returned.

If *Part Number* is 04N2964 and *ROS Level and ID* is less than or equal to 1\_04 (for example, 1\_02, 1\_01, or 1\_00), contact your local service representative. Tell your service representative that your system requires the CD-ROM firmware upgrade that is described in RETAIN TIP H1332.

If the data returned does not match the data described in the preceding paragraph, your system is not affected by this problem.

---

## Where to Find AIX 5L Version 5.2 Documentation

### Information Center

The pSeries Information Center is an information portal for AIX and pSeries customers. From this site, you can access:

- AIX Version 4.3, AIX 5L Version 5.1 for POWER, and AIX 5L Version 5.2 documentation
- Hardware documentation
- Message database for 7-digit error codes, LEDS, and error identifiers
- How-to's for users and system administrators
- FAQs
- Links to Redbooks, White Papers, and related products

To access the Information Center, go to the following Web site:

[http://publib16.boulder.ibm.com/pseries/en\\_US/infocenter/base](http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base)

### AIX 5L Version 5.2 Installation Documentation on CD

AIX documentation is also contained on the AIX documentation CD. The documentation is made accessible by installing the documentation CD onto the hard disk or by mounting the CD in the CD-ROM drive.

**Note:** For the most current documentation information, see the Web site.

The following publications describe AIX 5L Version 5.2 installation:

- *AIX 5L Version 5.2 Operating System Installation: Getting Started*, order number SC23-4388
- *AIX 5L Version 5.2 Installation Guide and Reference*, order number SC23-4389

Both installation guides are available online in the pSeries Information Center under AIX 5L Version 5.2 documentation and in hardcopy.

To order these installation guides, contact your point of sale, or in the U.S., call IBM Customer Publication Support at 1-800-879-2755. Specify order number SC23-4374.

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## Migration

### Minimum Memory/Disk Requirements

The minimum memory requirement for AIX 5L Version 5.2 is 128 MB and a 2.2 GB hard drive.

## Migration from 4.2.1

A system running AIX Version 4.2.1 must be updated with the September 1999 or later update CD before migrating to AIX 5L Version 5.2. The CD label should have the number LCD4-0252-13 or later. To check a running system, verify that the **bos.rte.install** is at level 4.2.1.17, or later.

To have Web-based System Manager and the latest Java software installed on your system, after the migration completes you should install the Graphics bundle. You can install this from the installation assistant by selecting **Install Software Applications, Install and Update Software, and Install Software Bundle**, or you can install using `smitty install_bundle`.

## xlC.rte

If migrating to AIX 5L Version 5.2 from AIX Version 4.2.x or AIX Version 4.3.x, check the level of **xlC.rte** by using the following command:

```
lslpp -L xlC.rte
```

If the **xlc.rte** level is earlier than 5.0.2.x, you must apply APAR IY17981 before migrating to AIX 5L Version 5.2. Without APAR IY17981 installed, the migrated system could fail to boot.

APAR IY17981 is available from the AIX Electronic Fix Distribution Site as follows:

<http://www.ibm.com/server/support>

## Trusted Computing Base (TCB)

### Known Problems and Workarounds

**/dev/dlcqllc:** If on a migrated system with TCB enabled, you have the following error from `tcck -n tree`:

```
3001-020 The file /dev/dlcqllc was not found
```

Run the following command to recreate the **/dev/dlcqllc** device:

```
# mkdev -c dlc -s dlc -t x25_qllc
```

This will recreate the **/dev/dlcqllc** device.

**/usr/sbin/named:** *After a migration of a TCB enabled system, you may have the following errors from `tcck -n tree`:*

```
3001-089 The symbolic link from the file /usr/sbin/named
to /usr/sbin/named4 should not exist.
```

```
3001-089 The symbolic link from the file /usr/sbin/named-xfer
to /usr/sbin/named4-xfer should not exist.
```

**To correct these errors, run the following as the root user:**

```
# tcck -a /usr/sbin/named type=SYMLINK target=/usr/sbin/named4
# tcck -a /usr/sbin/named-xfer type=SYMLINK target=/usr/sbin/named4-xfer
```

**Entries will be added to `/etc/security/sysck.cfg` for these links.**

### Migration Installations from AIX Version 4.3 to AIX Version 5.2

If an AIX Version 4.3 system was Trusted Computing Base (TCB) enabled, and has been upgraded to 4.3.3.75 through updates, after a migration to AIX Version 5.2, the following files may have **tcck** errors when you run the the following command,

```
# tcck -n tree
```

This applies to the following systems:

- `/usr/lib/drivers/wgcn`

- /usr/lib/methods/cfgsf
- /usr/lib/methods/cfgwgcn
- /usr/lib/drivers/sf

The permissions on these files will be removed. To correct this problem run the following commands:

```
# tcbck -a /usr/lib/drivers/wgcn size checksum
# tcbck -a /usr/lib/methods/cfgsf size checksum
# tcbck -a /usr/lib/methods/cfgwgcn size checksum
# tcbck -a /usr/lib/drivers/sf size checksum
# tcbck -y /usr/lib/drivers/wgcn /usr/lib/methods/cfgsf /usr/lib/methods/cfgwgcn /usr/lib/drivers/sf
```

After running the `tcbck -y` command, you will get the following errors:

```
3001-023 The file /usr/lib/methods/cfgwgcn has the wrong file mode.
3001-023 The file /usr/lib/drivers/wgcn has the wrong file mode.
3001-023 The file /usr/lib/methods/cfgsf has the wrong file mode.
```

However, the file modes will be corrected. Running `tcbck -n tree` again will confirm this.

## alt\_disk\_install Migration

The `nimadm` utility allows the user to use NIM and `alt_disk_install` to migrate an existing system from AIX Version 4.3 or AIX Version 5.1 to AIX Version 5.2. Refer to the `nimadm` command in *AIX 5L Version 5.2 Installation Guide and Reference* for more information.

## bos.clvm.enh after Migration to AIX 5L Version 5.2

*The bos.clvm.enh fileset is not installed when migrating to AIX 5L Version 5.2. After migrating, users of the bos.clvm.enh fileset will need to re-install the fileset from AIX Version 5.2 installation media.*

## sysck Errors on X11.loc.nl\_BE.Dt.rte

*Users of the nl\_BE language fileset might experience syschk error messages during migration to AIX 5L Version 5.2. If this is encountered, please perform a force install of X11.loc.nl\_BE.Dt.rte.*

## xmodmap/Zh\_CN Errors after Migration

*After migrating to AIX 5L Version 5.2, an "lppchk -f" command might give the following warning message:*

```
lppchk: 0504-206 File /usr/lpp/X11/defaults/xmodmap/Zh_CN/keyboard could not be located.
lppchk: 0504-206 File /usr/lpp/X11/defaults/xmodmap/Zh_CN could not be located.
```

*If you have this condition, please reinstall X11.loc.Zh\_CN.base.rte after migration.*

## KDE Desktop after Migration from AIX Version 4.3 to AIX 5L Version 5.2

*If the CDE and KDE desktops are both installed on a migrated or installed AIX Version 5.2 system, the KDE desktop may not start up from the CDE login. To fix this problem, remove the following CDE startup from the `/etc/inittab` file.*

**Note:** *You must have root user authority to remove this CDE startup.*

```
dt:2:wait:/etc/rc.dt
```

*And leave the following KDE entry:*

```
kdm:2:once:/opt/freeware/kde/bin/kdm
```

*in the `/etc/inittab` file.*

## rc.net

When migrating to AIX 5L Verion 5.2, the line `/usr/sbin/no -o extendednetstats=0 >>/dev/null 2>&1` is commented in `/etc/rc.net`. See the documentation for the `no` command in *AIX 5L Version 5.2 Commands Reference, Volume 4*, and "AIX Kernel Tuning Parameter Modifications" in the *AIX 5L Version 5.2 Performance Management Guide* for details about the new tuning functionality.

## Performance Monitoring (PM) API

The Performance Monitoring API is contained in the `bos.pmapi` fileset. A beta version of the same code was made available to selected customers, and also through alphaWorks, under the name `pmtoolkit`.

When migrating from any level of AIX with any level of the beta fileset installed, you must uninstall the `pmtoolkit` fileset, and reboot the machine before installing the `bos.pmapi` fileset. If you do not do this, the machine will fail to boot when attempting to load the `pmtoolkit` fileset's kernel extension.

Check if the `pmtoolkit` fileset is installed by typing the following at the command line:

```
lslpp -l pmtoolkit
```

- If you get the following output:

```
lslpp: 0504-132 Fileset pmtoolkit not installed
```

You can safely install the `bos.pmapi` fileset.

- If you get the following output:

Fileset	Level	State	Description
-----			
Path: /usr/lib/objrepos			
pmtoolkit	1.3.1.6	COMMITTED	Performance Monitor Toolkit 1.3.1

1. Run the following command:

```
installp -u pmtoolkit
```

2. Reboot the machine. After the machine reboots, you can safely install the `bos.pmapi` fileset.

**Note:** Read "Using PM API on a Partitioned Machine" on page 18 in the "Performance Analysis and Tuning Tools" on page 17 section of the Release Notes.

**The Performance Monitoring API is only supported on partitioned configurations using firmware level RH020305 and later.**

**Check your firmware level by typing `lscfg -vp | grep -p Platform` at the command line.**

## SNMPv3

After migrating to AIX 5L Version 5.2, the SNMPv3 non-encrypted version will be running by default. If you had your own community, trap, or smux entries in your `/etc/snmpd.conf` file, those must be manually migrated to the `/etc/snmpdv3.conf` file. For instructions on how to migrate that information, see "Network Management" in *AIX 5L Version 5.2 System Management Guide: Communications and Networks*.

## Kerberos

In the past, the Kerberos library was statically linked into all the secure rcmds (`rlogin`, `telnet`, `rnp`, `rsh` and `ftp`). Starting in AIX 5L Version 5.2, all the secure rcmds (remote commands) will use the Kerberos Version 5 library and the GSSAPI library provided by the IBM Network Authentication Service Version 1.3. Network Authentication Service Version 1.3 is located on the expansion CD. The only LPP that is mandatory to install is `krb5.client.rte`. If one is migrating to AIX 5L Version 5.2 and had Kerberos Version 5 or Kerberos Version 4 installed, the install scripts will prompt the user to install `krb5.client.rte`. Now the secure rcmds

will support Kerberos clients and servers from both Native Kerberos 5 and DCE. For more information, see "Understanding the Secure Rcmds" in the *AIX 5L Version 5.2 System User's Guide: Communications and Networks*.

## AIX Toolbox for Linux Application Migration Information

**Note:** AIX 4.3.3 Toolbox applications will not run correctly on AIX 5L Version 5.2 unless the steps in this section are performed.

If you previously installed the AIX Toolbox for Linux Applications and the level of **rpm.rte** is less than 3.0.5.20, remove that software from the system before migrating to AIX 5L Version 5.2. The Toolbox software installed with **rpm.rte** levels prior to 3.0.5.20 are incompatible with software from the AIX Toolbox installed on AIX 5L Version 5.2 because of shared library restructuring.

Also, remove the software if you are performing a preservation installation and you established a **/opt/freeware** file system for the Toolbox software. The files in that file system will not be automatically overwritten during a preservation installation. To remove your existing RPMS, use the **destroyrpms** tool available in the **/tools** directory on the AIX Toolbox for Linux Applications CD by typing the following:

```
mount -vcdvfs -oro /dev/cd0 /mnt  
/mnt/tools/destroyRPMS
```

Additional information is also available on this CD in the **/README.TXT** file.

---

## Installation

This section contains information about installing AIX 5L Version 5.2 that supplements the information contained in the AIX 5L Version 5.2 installation documentation. Refer to the publications listed in *AIX 5L Version 5.2 Installation Guide and Reference*, for complete installation instructions.

To obtain AIX 5L Version 5.2 installation hints and tips, send e-mail with a subject line of **52\_Install\_Tips** to [aixserv@austin.ibm.com](mailto:aixserv@austin.ibm.com), the AIX Service Mail Server.

## Installing AIX 5L Version 5.2

The following methods can be used to install AIX 5L Version 5.2:

- Complete overwrite installation
- Preservation installation
- Migration installation

**Note:** After installing or migrating a system to AIX 5L Version 5.2, you can install a lower level of AIX by restoring a system backup or by performing a new and complete overwrite with base media. Preservation installations from AIX 5L Version 5.2 to a lower level of AIX are not supported.

To install AIX 5L Version 5.2, boot from the product media and follow the instructions in the *AIX 5L Version 5.2 Installation Guide and Reference*, order number SC23-4389.

**Note:** AIX 5L Version 5.2 cannot be installed on MCA (Micro Channel Architecture) or PReP machines.

For more information on migration, see the Migration section of this document.

## Software License Agreements (SLA)

**When using ASCII displays, there are some instances where the Software License Agreements may not be fully displayed. In this event, the License Agreements can be viewed in all languages from the following link:**

<http://www.ibm.com/software/sla/sladb.nsf>

*Portions of the Portuguese locale pt\_BR were improperly translated, preventing the installation of AIX to complete. The pt\_BR user should first install AIX with the C locale. Then, install the pt\_BR locale and set the locale to pt\_BR using SMIT.*

## New Base Operating System Installation Menus

When performing a base operating system (BOS) installation, if you select **Change/Show Installation Settings and Install** from the Welcome to Base Operating System Installation and Maintenance menu, the third menu option has changed from **Advanced Options** to **More Options**. If you select **More Options**, the **Install Options** menu displays the following choices *on 32-bit systems*:

- 1.Desktop.....CDE
- 2.Enable Trusted Computing Base.....No
- 3.Graphics Software.....Yes
- 4.Documentation Services Software.....Yes
- 5.Enable System Backups to install any system.....Yes

**Note:** The menu choices change depending on if the console is graphical or not, and if the system is 64-bit capable or not. The options also vary based on the type of installation.

### Graphics Systems

The **Desktop** choices are CDE, KDE, GNOME, and NONE. If you select NONE, the following are still installed with the Graphics Bundle: X11, Java, and Web-based System Manager. The Graphics bundle installation always defaults to yes (to be installed), whether the console is graphical or not. It allows for remote access to the applications from other graphical systems. The DESKTOP choice is not available if the console is non-graphical.

### Enable 64-bit Kernel and JFS2

Beginning in AIX 5L Version 5.2, the following are now two separate choices:

- Enable 64-bit Kernel
- Create JFS2 File Systems

If the system is 64-bit, you may select to just have the 64-bit kernel as the running kernel, and create JFS file systems, or select to have both the 64-bit kernel and JFS2 file systems. It is required that if JFS2 file systems are created, the kernel must be 64-bit. These options are only available for new and complete overwrite installations. During migration or preservation installations, the kernel and file systems will be retained as is.

## Memory Requirements

AIX 5L Version 5.2 requires a minimum of 128 MB of physical memory.

## Paging Space Requirements

AIX 5L Version 5.2 creates a 512 MB paging space (**/dev/hd6**) for all new and complete overwrite installations.

## Disk Space Requirements

AIX 5L Version 5.2 requires a minimum of 2.2 GB of physical disk space for the same set of installed filesets due to the increased library sizes and additional function.

**Note:** The following measurements provide information on disk usage when you install AIX 5L Version 5.2 as compared to previous versions.

### Base AIX Installation (Graphical System with CDE-Default)

	AIX 4.3.3 Allocated (Used)	AIX 5L for POWER Version 5.1 Allocated (Used)	AIX 5L Version 5.2 Allocated (Used)
/	4MB (2.5MB)	8MB (5.6MB)	16MB (9.2MB)
/usr	294MB (279MB)	385MB (370MB)	720MB (698.8MB)
/var	4MB (1.3MB)	4MB (1.4MB)	16MB (4.6MB)
/tmp	16MB (0.6MB)	20MB (0.9MB) see note	24MB (0.8MB) see note
/opt	N/A	4MB (0.2MB)	24MB (7.2MB)

**Note:** If **/tmp** is less than 32 MB, it will be increased to 32 MB during a migration installation so that the AIX 5L Version 5.2 boot image is successfully created at the end of the migration.

During a migration installation, if **/opt** exists only as a directory, and has less than 3 MB of data, then a new logical volume and file system (**/dev/hd10opt** and **/opt** respectively), will be created and the data that existed in the **/opt** directory will be moved to the new file system.

If there is more than 3 MB of data in **/opt**, the new logical volume and file system are not created.

If any file system existed that had a mount point in the **/opt** directory, or a mount point of **/opt** itself, the new logical volume and file system are not created.

## Other Installation Information

### Installation Packaging Formats

AIX 5L Version 5.2 supports the following installation-packaging formats:

- **installp** (AIX system installation command and packaging format)
- RPM (a Linux installation command and packaging format)
- ISMP (InstallShield Multi-Platform packaging format)

By using the **geninstall** command, you can list and install from media that contains installation images that were packaged in any of these formats. The **geninstall** and **gencopy** commands recognize the non-**installp** installation formats and call the appropriate installers or copy the images, respectively.

The AIX 5L Version 5.2 product media contains **installp** packages and RPM packages that are installed during a BOS installation. The **installp** packages are located in the following path:

```
/mount_point/installp/ppc
```

The RPM packages are located in the following path:

```
/mount_point/RPMS/ppc
```

If you have media that contains ISMP packages for AIX 5.2, the ISMP packages are located in the following path:

```
/mount_point/ISMP/ppc
```

The **installp**, **bffcreate**, **geninstall**, **gencopy** and **nim** commands recognize this media structure.

For more information on software packaging, see the Software Product Packaging Concepts section in the *AIX 5L Version 5.2 Installation Guide and Reference*.

### Example:

If you are calling **bffcreate** (or a user interface) to copy images from CD to a directory on the disk, new subdirectories will be created in the target directory and the images will be placed in those directories.

In AIX 4.3, the default target directory for **bffcreate** was **/usr/sys/inst.images**.

In AIX 5L Version 5.2, if the following command is used on a PowerPC machine:

```
bffcreate -d /dev/cd0 all
```

the default target directory would be **/usr/sys/inst.images/installp/ppc**.

Use the **gencopy** command as follows:

```
gencopy -d /dev/cd0 all
```

In addition to all the **installp** images, you would also get the **rpm** images that are contained on the product media, as follows:

```
cd /usr/sys/inst.images/RPMS/ppc
find . -print
./cdrecord.aix4.3.ppc.rpm
./mkisofs.aix4.3.ppc.rpm
```

Because of this change, you may have to update any custom scripts in which image locations are hardcoded.

### DVD-RAM Drive Support for System Backup

In AIX 5L Version 5.2, support was added to create UDF (universal disk format) backups to DVD-RAM media. System backups (made with the **mkcd** command) have a limitation in that they expect the media to be 4.7 GB or larger per side. The **mkcd** command will not process the next volume until it writes over 4 GB on the current volume, thus the use of smaller media would result in corruption when going beyond the media's capacity. The other commands (such as **tar**, **cpio**, **backup**) do not have this size constraint.

For more information on creating CD and DVD backups, refer to the **/usr/lpp/bos.sysmgt/mkcd.README.txt** file.

To support booting from UDF backup media, the system requires the latest firmware. For firmware updates, refer to the following Web site:

<http://techsupport.services.ibm.com/server/mdownload/download.html>

### alt\_disk\_install and Dynamic Logical Partitioning (DLPAR)

It is possible, on a system that supports dynamic logical partitioning (DLPAR), to dynamically add an adapter with disks to a running logical partition (LPAR). A new **rootvg** can then be installed to these added disks using the **alt\_disk\_install** command (clone or **mksysb**). There are a few flags to keep in mind if running **alt\_disk\_install** with dynamically added target disks on an LPAR system:

- If the target disk will be used to boot an LPAR other than the one where the operation is being executed, the **-O** (device reset) flag should be used.
- The **-B** flag should be added to prevent **bootlist** from being executed. A general limitation of dynamically added disks is that you can not specify them as a boot device (before an initial reboot). If you are attempting to boot an LPAR from dynamically added disks, the bootlist should be set in SMS menus.
- Dynamically added disks will not appear bootable to the operating system (before an initial reboot). The user will need to verify that the newly added adapter and disks are bootable and run **alt\_disk\_install** with the **-g** (ignore bootability checks) flag.

### BOS Installation Support for Fibre Channel Boot

BOS installation supports installation to fibre channel-attached disks. Either bootable AIX 5L Version 5.2 installation media or NIM resources prepared from such media is required. The fibre channel-attached

disks must be attached to a fibre channel host adapter that supports boot capability. However, fibre channel drivers that have multiple, physical connections to the host or that require supplemental device software should not be chosen as **rootvg** drives.

A fibre channel-attached disk can be identified by a World Wide Port Name and Logical Unit ID. To see the format of the World Wide Port Name and Logical Unit ID, type:

```
lsattr -E -0 -l DiskName
```

- In a non prompted BOS installation, you can specify a fibre channel-attached disk in the `target_disk_data` stanza of the **bosinst.data** file using the following as an example:

```
SAN_DISKID = (World Wide Port Name)/(Logical Unit ID)
```

In the above example, (World Wide Port Name) and (Logical Unit ID) are each in the format returned by **lsattr**, that is, "0x" followed by 1-16 hexadecimal digits.

- In a prompted BOS installation, the BOS menus display the list of available disks and associated information. You can select the desired disks.

## System Dump

The default system dump device is paging space. This default may not be adequate for system configurations that have large memory sizes or when system availability is a concern.

For large memory systems, AIX allocates a dedicated dump device (`/dev/lg_dumplv`) if disk space is available. The following table shows the sizes of the dump devices based on the amount of real memory present in the system.

*Dump Device Size (Based on System Real Memory)*

Real Memory	Dump Device
4 GB < 12 GB	1 GB
12 GB < 24 GB	2 GB
24 GB < 48 GB	3 GB
>= 48 GB	4 GB

**Note:** If the root user starts a dump to a dump device set to `/dev/sysdumpnull`, the system will crash and no dump will occur.

The dump is now copied to tape in **pax** format instead of **tar**, because **pax** supports large (greater than 2 GB) files.

The **dumpcheck** facility runs by default each day at 3:00 p.m. local time. See the root **crontab** file to change the time that **dumpcheck** runs. The **dumpcheck** facility ensures that there is enough space in the dump device and copy directory to receive the system dump. If dump compression will facilitate a system dump, it will be enabled unless you have manually turned it off. The results of **dumpcheck** are in the system error log.

## Network Installation Management (NIM)

The Network Installation Management (NIM) includes a **README** file that is installed with the NIM Master **bos.sysmgmt.nim.master** fileset. The path name of the file is `/usr/lpp/bos.sysmgmt/nim/README`. The **README** file contains additional information about the AIX 5L Version 5.2 NIM product and includes the following topics:

- Restrictions on SPOT Creation for Releases Prior to 5.2 - (New LPP\_SOURCE Directory structure)
- Web-based System Manager NIM May Have Problems Installing SW on Client Machines
- Restrictions on Customize Operation for RPM Packages
- Steps Necessary For Adding GNOME -or- KDE Desktop Support

**Known Problem and Workaround:** During NIM SPOT creation, there may be instances where the SPOT creation does not complete, or all filesets are not installed. This is because NIM cannot expand the filesystem size. To work around this problem, expand the filesystem size by 50 MB and retry the SPOT creation.

## Reliable Scalable Cluster Technology (RSCT)

The RSCT Resource Monitoring and Control (RMC) application is part of RSCT. The RSCT includes a README file that is installed with the **rsct.core.utils** fileset. The file is located at **/usr/sbin/rsct/README/rsct.core.README**. The README file contains additional information about the RMC application.

**Restriction for Japanese Locales:** When the responses specified with the predefined **notifyevent** script are used in a Japanese locales, alphanumeric (English) characters should be used for the condition name. If the condition name has non-alphanumeric characters in the mail header, it will be corrupted. To work around this problem, the system administrator might modify the **notifyevent** script to not use the **\$ERRM\_COND\_NAME** environment variable in the mail subject.

## Firmware Limitation

The firmware in many of the PCI bus-based RS/6000 machines is limited in regard 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, resulting in 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 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 GB boundary on the hard disk. This is not a problem for most customers because the AIX installation 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 parameter 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 installation process has always created the boot logical volume near the edge of the hard disk because that region of the hard disk has the slowest access time, and this allows other regions of the hard disk to be used by file systems that can benefit from the better performance.

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

In almost all cases, you do not need to create a new boot logical volume, but if you do, use the **lsvg** and **lslv** commands to verify that the newly created boot logical volume does not reside above the 4 GB address on the hard disk.

An example of this calculation follows:

1. Run **lsvg rootvg** to determine PP SIZE. On a 4.5 GB hard disk, the default PP SIZE is 8 MB. Make a note of that size.
2. Run **lslv -m bootlv00**  
Replace bootlv00 with the name of the newly created boot logical volume. The numbers in the second, fourth, and sixth columns indicate the physical partitions that have been assigned to the boot logical volume. If the PP SIZE is 8 MB, the boot logical volume must not use any physical partition above 511. ( $512 * 8 = 4096$ , which is 4 GB). Similarly, if the PP SIZE is 16 MB, the boot image must not use any partition above 255, and if the PP SIZE is 4 MB, the boot image must not use any partition above 1023.

As a reminder, this problem does not occur unless you have created and initialized a boot image that resides above the 4 GB boundary.

### ***Machine Limitations with Universal Data Format (UDF)***

***When booting a 7043-150 or 7046-B50 system from the Universal Data Format (UDF) media, use the O/F command instead of SMS. The following is an example of how to use the O/F command:***

**Note:** *The following example command is not the exact command you should use. Substitute the location of the DVD on your machine for the italicized text below.*

```
boot /pci@fef00000/scsi@c/sd@4,0:1,\ppc\bootinfo.txt
```

---

## **Service**

### **Fixes and Problem-Solving Databases**

You can download AIX fixes from the following IBM Server Support Web site:

<http://www.ibm.com/server/support>

You can also search technical databases, including:

- APARS
- Tips for AIX administrators

Many other technical support resources are available at this Web site.

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## Chapter 2. AIX 5L Version 5.2

The following are some of the features that were introduced in AIX 5L Version 5.2:

- Dynamic Logical Partitioning (DLPAR)
- Capacity Upgrade on Demand (CUoD)
- Advanced RAS features
- Enhancements to Workload Manager
- Cluster Systems Management (CSM) for monitoring and administering multiple machines (both AIX and Linux) from a single point of control

To find out more about the new features introduced in AIX 5L Version 5.2, refer to the Information Center at the following Web site:

[http://publib16.boulder.ibm.com/pseries/en\\_US/infocenter/base](http://publib16.boulder.ibm.com/pseries/en_US/infocenter/base)

---

### Base Operating System (BOS)

#### Dynamic Logical Partitioning (DLPAR)

DLPAR provides great flexibility in the management of logical partitions. One can add, remove, or move processors, memory, and PCI slots between partitions as capacity requirements change without having to reboot any of the effected partitions, resulting in higher levels of resource utilization. Also, with this new capability one can establish separate test and production partitions and over time transition the resources from the production to the test partition, creating in effect a new production environment without experiencing any down time.

It is easy to setup your system for DLPAR by doing the following:

1. Install AIX 5.2
2. Configure the network
3. Reboot AIX
4. Wait five minutes

You are now ready to perform DLPAR operations at the HMC

One requirement is that each logical partition must have its own network adapter

Logical partitions may be installed with either AIX 5.1 or 5.2, although to perform DLPAR operations, it is necessary to use AIX 5.2 in all of the affected partitions.

The dynamic reconfiguration of processors and memory is well integrated into AIX. In general, there are no application reconfiguration issues that need to be addressed. It just works. On the other hand, the dynamic reconfiguration of PCI slots does require the customer to log into the effected partition(s) and perform the relevant Hot Plug Procedures before DLPAR remove/move and after DLPAR add/move commands.

Adapter Hot Plug is an existing AIX feature. Use the search key words "hot plug" in AIX online documentation.

Both the 32-bit and 64-bit kernels support dynamic partitioning. By design, the 32-bit kernel supports only 96 GB of memory, so if you want to use more memory, then you should use the 64-bit kernel.

Set your minimum and maximum CPU and memory requirements in the LPAR's profile. To change the minimum memory less than desired, check the "Small Real Mode Address Region" box under memory tab in the LPAR profile dialog.

*For detailed instructions on executing DLPAR adapter actions, refer to the eServer pSeries Planning for Partitioned-System Operations book in the Information Center.*

## 64-bit Kernel

AIX 5L Version 5.2 provides a scalable 64-bit kernel that is capable of supporting large application workloads running on 64-bit hardware. The 64-bit kernel scalability is primarily provided through a larger kernel address space. This space supports larger system software applications without requiring practical bounds and kernel extension interfaces.

**Note:** The 32-bit kernel continues to be supported on AIX 5L Version 5.2. The maximum real memory supported by a 32-bit kernel system (or partition) is 96 GB.

## System Support

For information about supported and unsupported items, see Appendix A, “AIX 5L Version 5.2 Supported and Unsupported Items” on page 29.

## Base Functionality

For the most part, the AIX 5L Version 5.2 kernels provide the same functionality, regardless of which kernel is being used. The 32-bit and 64-bit kernel systems have common base libraries, commands and utilities, and header files.

Differences between 32-bit and 64-bit kernel systems are limited to the following functions:

**System and I/O Support:** The 64-bit kernel limits support to 64-bit POWER-based systems, while the 32-bit kernel supports both 32-bit and 64-bit POWER-based systems. In addition, the 64-bit kernel does not support all I/O that is supported by the 32-bit kernel.

## Application Support

The 64-bit kernel supports both 32-bit and 64-bit applications. Application source and binaries are portable between AIX 5L Version 5.2 64-bit and 32-bit kernel systems, in the absence of any application dependencies on internal kernel details or on kernel extensions that are not supported under the 64-bit kernel but are supported under the 32-bit kernel.

**Binary Compatibility:** Binary compatibility is provided for 32-bit applications running on earlier versions of AIX on POWER-based systems, except for applications linked statically or applications dependent on undocumented or unsupported interfaces. In addition, some system file formats have changed, and 32-bit applications processing these files may have to be recompiled.

**Application Scalability:** AIX 5L Version 5.2 provides a more scalable application binary interface (ABI) for 64-bit applications. To take advantage of the scalability improvements to 64-bit programs, all 64-bit applications and libraries must be recompiled on AIX 5L Version 5.2. In addition, existing 32-bit kernel extensions and device drivers used by 64-bit applications may have to be modified in order to support the new 64-bit ABI.

## Kernel Extensions

Kernel extensions for the 64-bit kernel run in 64-bit mode and have the scalability of the larger kernel address space. Some kernel services available in the 32-bit kernel are no longer provided by the 64-bit kernel, so existing 32-bit kernel extensions may have to be ported in order to be used with the 64-bit kernel.

Existing 32-bit kernel extensions continue to be supported by the 32-bit kernel, but these kernel extensions are not usable by the 64-bit kernel. Not all of the kernel extensions supported for the 32-bit kernel are supported for the 64-bit kernel, particularly the device drivers for the I/O.

**Dual-mode Kernel Extensions:** AIX 5L Version 5.2 supports dual-mode kernel extensions, which can be loaded by a common configuration method, regardless of which kernel is being used. A dual-mode kernel extension is an archive file that contains both the 64-bit and 32-bit versions of the kernel extension as members.

## Installation and Enablement

The 64-bit kernel is provided as part of the base AIX 5L Version 5.2 base media and is installed on all hardware systems that it supports. By default, the 32-bit kernel is enabled at base system installation. However, you can override this at installation time to enable the 64-bit kernel through the system installation panels. (See “New Base Operating System Installation Menus” on page 7 for details on enabling the 64-bit kernel at BOS installation time.)

It is possible to switch between the 32-bit and 64-bit kernels without reinstalling the operating system. This can be done by modifying the `/usr/lib/boot/unix` and `/unix` to be a symbolic link to the binary for the desired kernel, running the `bosboot` command to write a new system boot image, and rebooting. The path name of the 64-bit kernel is `/usr/lib/boot/unix_64` while the path names of the uniprocessor and multiprocessor versions of the 32-bit kernel are `/usr/lib/boot/unix_up` and `/usr/lib/boot/unix_mp`.

## 64-bit Applications Display Error on 32-bit Kernel

On the 32-bit kernel, 64-bit applications give a display error when the shared memory transport kernel extension is used. The default socket used by AIX is the shared memory transport. The workaround for this limitation is to export the display to a UNIX socket by using the following command:

```
export DISPLAY=unix:0.0
```

## JFS2

JFS2 (enhanced journaled file system) is a file system, introduced in AIX 5L for POWER Version 5.1, that provides the capability to store much larger files than the existing Journaled File System (JFS). Customers can choose to implement either JFS, which is the recommended file system for 32-bit environments, or JFS2, which offers 64-bit functionality.

**Note:** Unlike the JFS file system, the JFS2 file system will not allow the `link()` API to be used on files of type directory. This limitation may cause some applications that operate correctly on a JFS file system to fail on a JFS2 file system.

The following table provides a summary of JFS and JFS2 functions:

Functions	JFS2	JFS
Fragments/Block Size	512-4096 Block sizes	512-4096 Frags
Maximum file system size	16 Terabytes	1 Terabyte
Maximum file size	16 Terabytes	64 GB
Number of i-nodes	Dynamic, limited by disk space	Fixed, set at file-system creation
Directory organization	B-tree	Linear
Compression	No	Yes
Quotas	No	Yes

**Note:** *The maximum file size and maximum file system size is limited to 1 Terabyte when used with the 32-bit kernel.*

## splitvg Command

*The splitvg command is not supported for the rootvg.*

*The splitvg command is not supported for a volume group that has an active paging space.*

## Known Problem with ksh and ksh93

If the right-hand pattern of a regular expression contains the @ or | characters used with their special meaning, the expression may not be properly evaluated. In this case, use `/usr/bin/ksh93`.

With `/usr/bin/ksh93` input redirection using the "here document" may not be successful. To work around this problem, `/usr/bin/ksh` can be used.

## Perl

The following Perl filesets are shipped with AIX pursuant to the terms of the artistic license:

- `perl.rte` 5.8.0 (version 5.8)
- `perl.man.en_US`

For more information, run the `perl -v` command or to view the artistic license, see:

<http://www.perl.com/language/misc/Artistic.html>

The `perl.rte` fileset will be installed automatically.

**Note:** IBM continues to ship Perl, but does not support it.

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

<http://www.perl.org>

The new perl man pages are now located in `/usr/opt/perl5/man` and `/usr/opt/perl5/man64`.

***AIX 5L Version 5.2 introduces perl 5.8.0. If you have a perl external subroutine compiled on earlier versions of perl, the external subroutine may need to be recompiled with threading enabled on perl 5.8.0.***

***Due to binary incompatibility between perl versions 5.6 and 5.8, adump on AIX 5L Version 5.2 might core dump in the interactive mode (adump -i). If interactive mode is desired, the user needs to install perl 5.6 and use adump.***

## C99 Language Interfaces

AIX 5L Version 5.2 system libraries and headers include new interfaces required by the ISO/IEC 9899:1999(E) (C99) language standard and the Single Unix Specification, Version 3. Some of the new interfaces may have the same names as symbols in existing programs. The new interfaces may be hidden by specifying `-D_NOISOC99_SOURCE` when compiling.

Most of the new C99 language interfaces are unavailable when compiling to use the 128-bit long double floating point format rather than the default 64-bit long double format.

Domain errors generally do not occur for math routine error conditions.

## IBM AIX Developer Kit, Java™ 2 Technology Edition, Version 1.3.1

IBM AIX Developer Kit, Java™ 2 Technology Edition, Version 1.3.1 is released in Java131.\* filesets. For more information, see the `/usr/java131/README.HTML` file or go to the following Web site:

<http://www.ibm.com/developerworks/java/jdk/aix/index.html>

AIX Developer Kit, Java 2 Technology Edition, Version 1.3.1, 32-bit Version for POWER is included with the AIX base operating system. The 64-bit version is available on the AIX 5L Version 5.2 Bonus Pack.

You can dynamically reconfigure a Logical Partition (LPAR) running a Java 1.3.1 application. Note that decreasing the number of CPUs or real memory allocated to an LPAR will likely degrade the performance of a Java application, but the application should continue to run.

You can also dynamically reconfigure an LPAR running an older version of Java, with one exception. If the LPAR has only 1 CPU, AIX will reject any reconfiguration request that tries to increase the number of CPUs allocated to the LPAR.

In 4Q2002, IBM plans to release the IBM 32-bit SDK for AIX, Java 2 Technology Edition, Version 1.4 and IBM 64-bit SDK for AIX, Java 2 Technology Edition, Version 1.4. Both of these products will be supported on AIX 5L Version 5.2. Beta versions of these products are available at the following Web site:

<http://www.alphaworks.ibm.com/tech/aixsdk>

In 1Q2003, IBM plans to support the AIX Developer Kit, Java 2 Technology Edition, Version 1.2.2 on AIX 5L Version 5.2.

AIX Developer Kit, Java Technology Edition, Version 1.1.8 and AIX Developer Kit, Java 2 Technology Edition, Version 1.3.0 are not supported on AIX 5L Version 5.2.

### **Some Versions of Java Are Not Dynamic Logical Partitioning (DLPAR)-Safe**

If a Java application is running that is not DLPAR-safe and a DLPAR add CPU operation is executed, the add CPU operation will fail. This only occurs when going from 1 to 2 CPUs.

### **Location Change for License Use Management (LUM) Commands**

The location of the License Use Management commands **i4blt**, **i4cfg**, **i4target**, and **i4tv** has changed from the **/var/ifor** directory to the **/usr/opt/ifor/ls/os/aix/bin** directory.

**Note:** To configure LUM, use **i4cfg -script**.

The **/usr/lib/netls/conf** directory does not exist on AIX 5L Version 5.2. The only valid directory for the nodelock file is the **/var/ifor** directory.

### **Performance Analysis and Tuning Tools**

The following performance tuning tools are new in AIX 5L Version 5.2:

- **vmo**, **ioo**, **schedo** : The **vmtune** and **schedtune** replacement tools to set kernel tuning parameters
- **tunsave**, **tunrestore**, **tundefault**, **tuncheck** : Tunable files manipulation commands

These tools are part of the new **bos.perf.tune** fileset, which contains a set of new SMIT menus designed to manipulate AIX tunable parameters. Those menus can be reached using *smitty tuning*. Permanent tunable parameter settings are now centralized in a new stanza file called **/etc/tunable/nextboot**.

The sample code **vmtune** and **schedtune** are now shell scripts calling the **vmo**, **ioo** and **schedo** tools.

If you are migrating from a prior AIX release, read the migration information and changes introduced by the **bos.perf.tune** fileset in *AIX Kernel Tuning Parameter Modifications* in the *AIX 5L Version 5.2 Performance Management Guide*.

The following performance analysis tools are new in AIX 5L Version 5.2:

- **curt**: A thread CPU utilization reporting tool
- **splat**: A lock contention analysis tool
- **xprofiler**: A **gmon.out** GUI analyzer previously shipped with the Parallel Environment
- A set of **/proc** based tools in the new **bos.perf.proctools** fileset

## Using PM API on a Partitioned Machine

The Performance Monitoring API is not supported on partitioned configurations before **bos.pmapi** 5.1.0.17, and at that level, it is supported only on firmware level RH020305 and later.

Check your **bos.pmapi** level by typing `ls1pp -l bos.pmapi`, and check your firmware level by typing `lscfg -vp | grep -p Platform` at the command line.

## JISX0213 Support for Japanese UTF-8 (JA\_JP 64-bit application)

This release is a technology preview with the following restrictions. Range of character set for input is limited to UCS-2 code points. Supported character sets for display are JISX0208 and JISX0212 only.

Support requires installation of following filesets:

<b>bos.iconv.ucs.com</b>	Unicode Base Converters for AIX Code Sets/Fonts
<b>bos.loc.com.JP</b>	Common Locale Support - Japanese
<b>bos.loc.com.utf</b>	Common Locale Support - UTF-8
<b>bos.loc.utf.JA_JP</b>	Base System Locale UTF Code Set - Japanese

For more information, refer to the `/usr/lpp/jls/doc/README.jisx0213.utf` or `/usr/lpp/jls/doc/README.jisx0213.pc` file.

## Chinese Characters

You can not input any Chinese characters in 64-bit application with Zh\_CN locale under 64-bit kernel.

## CAPP/EAL4+ Technology

A CAPP/EAL4+ system, as defined in the *AIX 5L Version 5.2 Security Guide*, provides the following administrative interfaces to its security functionality:

- Identification and authentication measures (configuration of users, password settings, login configuration, etc.)
- Audit measures (configuring bin mode audition, selecting audited events, processing audit trails, etc.)
- Discretionary access control (permission bits and ACLs for file system objects, IPC mechanisms and TCP ports)
- Setting of the system time
- Running the **diag** diagnostic subsystem
- Running the **su** command to become a privileged administrator (root)

This includes the configuration files and system calls that can be used to perform the appropriate administration.

The following user interfaces to the security functionality are provided:

- The **passwd** command for changing a user's password
- The **su** command for changing a user's identity
- The **at**, **batch** and **crontab** facilities for the scheduling of command processing
- Discretionary access control (permission bits and ACLs for file system objects and IPC mechanisms)
- Login mechanisms (for example, identification and authentication mechanisms) for the system console and the supported network applications (such as, telnet, ftp).

This includes the system calls dealing with the settings of user identity or access control.

***The AIX Version 5.2 CAPP/EAL4+ system runs on hardware platforms based on IBM eServer pSeries Symmetric Multiprocessor (SMP) systems using the POWER3-II CPU (p610) with 1 and 2***

*processors, SMP systems using the RS64 IV CPU (p660), and SMP systems using the POWER 4 CPU (p690).* Peripherals that are supported are terminals and printers, hard disks and CD-ROM drives as storage devices, and streamers and floppy disk drives as backup devices. Supported network connector types are Ethernet and Token Ring.

Do not use the **\$HOME/.rhosts** configuration file for remote login and execution of commands.

**Note:** Administrators must inform all users of the system not to use this configuration file.

**For more information on CAPP/EAL4+ Technology, see the following Web site:**

[http://www.radium.ncsc.mil/tpcp/library/protection\\_profiles/index.html](http://www.radium.ncsc.mil/tpcp/library/protection_profiles/index.html)

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## Communications, Networking, and I/O

### New Options for the no Command

<b>tcp_finwait2</b>	Specifies the length of time to wait in the <b>FIN_WAIT2</b> state before closing the connection, measured in half seconds. The default is 1200 half seconds (600 seconds or 10 minutes). Ranges from 0 to <b>USHRT_MAX</b> . <b>tcp_finwait2</b> is a runtime (dynamic) attribute.
<b>tcp_inpcb_hashtab_siz</b>	Specifies the size of the <b>inpcb</b> hash table for TCP connections. This table holds the <b>inpcbs</b> required for connection management and is implemented as a table of hash chains. A large table means that the linked hash chains will be small and lower the traversal time on average, but the memory footprint will be larger. Minimum value is 1, max is 999999. This option impacts performance and should be used with extreme caution. Please consult a performance analyst in case the value needs to be changed. The execution environment could have an influence on the value. It is strongly encouraged to maintain the system defined defaults, because they tend to execute optimally in most environments. The <b>tcp_inpcb_hashtab_siz</b> option is a loadtime option that should be changed through Smit or Web-based System Manager for post-5.2 systems, and takes effect after the reboot. Default size is 24999.
<b>udp_inpcb_hashtab_siz</b>	Specifies the size of the <b>inpcb</b> hash table for UDP connections. This table holds the <b>inpcbs</b> required for connection management and is implemented as a table of hash chains. A large table means that the linked hash chains will be small and lower the traversal time on average, but the memory footprint will be larger. Minimum value is 1, max is 999999. This option impacts performance and should be used with extreme caution. Please consult a performance analyst in case the value needs to be changed. The execution environment could have an influence on the value. It is strongly encouraged to maintain the system defined defaults, because they tend to execute optimally in most environments. The <b>udp_inpcb_hashtab_siz</b> option is a loadtime option that should be changed through Smit or Web-based System Manager for post-5.2 systems, and takes effect after the reboot. Default size is 24999.

## 7135 RAIDiant Array for AIX Requirements (after Installing AIX 5L Version 5.2)

Customers installing AIX 5L Version 5.2 on systems with attached 7135-110 or 7135-210 RAIDiant Array subsystems 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.) and requesting ECA 010. You can also order the publication for the 7135 titled, *7135 Raidiant Array for AIX: Installation Guide and Reference* (order number SC23-1742), which contains information on microcode and device driver installation.

## Enable Link Polling and Time Interval for Link Polling Configuration Attributes

The IBM 10/100 Mbps Ethernet PCI Adapter (23100020) does not have an interrupt-driven mechanism to tell the device driver of any changes in its link state.

To avoid this drawback, the device driver now provides an ODM attribute to determine the status of the link. This **Enable Link Polling** attribute is disabled by default. If this attribute is enabled, the device driver will poll the adapter every time period, equal to the time in milliseconds specified in the **Time interval for Link Polling** attribute, for a change in the adapter's link state.

If the adapter's link goes down for any reason, the device driver will disable its **NDD\_RUNNING** flag. When the device driver finds that the link has come back up, it will enable this **NDD\_RUNNING** flag.

To work successfully, protocol layer implementations such as Etherchannel need notification if the link has gone down. Enable the **Enable Link Polling** attribute for this adapter to accomplish this.

By enabling this flag, the performance of this adapter will decrease compared to when it is not enabled, because of the additional PIO calls that the device driver will make to the adapter every few milliseconds while it determines the link status.

## Enhanced Error Handling (EEH)

EEH is an error-recovery mechanism for errors that occur during load and store operations on the PCI bus. EEH is made possible by EADS chips incorporated in newer POWER-based servers. In effect, each PCI slot on the EADS is its own PCI bus. This allows each adapter to be isolated (which is useful if PCI bus errors occur because error recovery can occur without affecting the operation of other adapters). Isolating the failing adapter prevents a faulty component from causing problems on the system and allows continued operation of other PCI devices during error recovery. Information about the faulty component and nature of the error (recoverable versus permanent) is logged in the AIX Error log.

## Supported Devices

Device Driver support for EEH is limited to the following devices that are supported by AIX 5L Version 5.2:

- Storage Adapters:
  - Gigabit Fibre Channel
  - PCI SCSI RAID Devices
  - PCI Ultra SCSI Devices
  - PCI Dual Channel Ultra3 SCSI Adapter (6203) \*
  - PCI Dual Channel Ultra2 SCSI Adapter (6205) \*
- Communications and connectivity (PCI bus type):
  - Token-Ring PCI 4/16 Adapter (2920 and 4959)
  - IBM Ethernet 10/100 Mbps (2968)
  - 10/100 Mbps Ethernet PCI Adapter II (4962)
  - IBM 4-Port 10/100 Base-TX Ethernet PCI Adapter (4961) \*
  - 10/100/1000 Base-T Ethernet PCI Adapter (2975)
  - Gigabit Ethernet (2969)
  - TURBOWAYS 622 Mbps PCI MMF ATM Adapter (2946)
  - 2-Port Multiprotocol PCI Adapter (2962)
  - 8-Port and 128-Port 232/422 Async PCI Adapters (2943 and 2944)
  - IBM 64-bit/66 MHz PCI ATM 155 adapter (4953 and 4957)
- Encryption Adapters:
  - IBM PCI 4758 Cryptographic Coprocessor Card (4958 and 4963) \*

- IBM Crypto Accelerator (4960) \*
- Graphics and Miscellaneous
  - GXT135P Graphics Adapter (2848) \*
  - USB Open Host Controller (2737) \*
  - GXT4500P (2842)\*
  - GXT6500P (2843)\*

**Note:** The devices above that are denoted with an asterisk (\*) require the user to intervene and manually recover the device after a bus error is encountered (for example, through device reconfiguration). Also, you may need to reboot Graphics and USB devices because those devices may not completely recover. If the device encounters an error during the configuration process, the device will be left in the defined state until there is a subsequent configuration attempt.

## Known Problems

The following EEH error labels contain incorrect **Description** fields:

Label	Incorrect Description	Correct Description
EEH_ERR	Unable to allocate in JFS2 snapshot	EEH Kernel services error
PCI_TEMP_ERR	Write error on JFS2 snapshot	EEH temporary error for adapter
PCI_PERM_ERR	Unable to write into a JFS2 snapshot	EEH permanent error for adapter

All other fields in the error log are correct and relevant to the EEH error. Error Ids contained in the `/usr/include/sys/errids.h` file are also correct. When contacting IBM service and support, please use the **Error Id** field. Here are the Error Ids for these labels:

Label	Error ID
EEH_ERR	A1E9B3BF
PCI_TEMP_ERR	07AFC8D7
PCI_PERM_ERR	D1E7854F

## EtherChannel

At release time, the new EtherChannel Backup functionality, as well as the existing Network Interface Backup (**netif\_backup**) functionality, will only work with the following Ethernet adapters:

- **10/100 Mbps Ethernet PCI Adapter (23100020)**
- **4-Port 10/100 Base-TX Ethernet PCI Adapter (23100020)**

Support for the other Ethernet adapters will be provided in the service stream as fixes. The APAR numbers for these fixes are as follows:

- **10/100 Mbps Ethernet PCI Adapter II (1410FF01)**
  - APAR IY34820
- **10/100/1000 Base-T Ethernet PCI Adapter (14100401)**
  - APAR IY34822
- **Gigabit Ethernet-SX PCI Adapter (14100401)**
  - APAR IY34822

## Gigabit Ethernet-SX PCI Adapter and IBM 10/100/1000 Base-T Ethernet PCI Adapter

The Gigabit Ethernet-SX PCI Adapter and the IBM 10/100/1000 Base-T Ethernet PCI Adapter share the same device driver. Therefore, the device driver and diagnostic package can be obtained by installing the **devices.pci.14100401** fileset. The device driver conditionally switches code that is unique for either adapter.

**Note:** The **lslpp** output for **devices.pci.14100401** (shown below) refers to the Gigabit Ethernet-SX PCI Adapter even though the fileset is shared by both adapters.

```
# lslpp -L | grep devices.pci.14100401
devices.pci.14100401.diag 5.2.0.0 C Gigabit Ethernet-SX PCI Adapter
devices.pci.14100401.rte 5.2.0.0 C Gigabit Ethernet-SX PCI Adapter
```

## TCP Checksum Offload Feature

*There is a known issue with the 10/100 Mbps Ethernet PCI Adapter II (1410ff01) when the adapter's transmit TCP checksum offload feature is enabled. Occasionally, the adapter may not compute the TCP checksum correctly for transmitted TCP/IP packets. This can cause degraded performance. In order to avoid (or remedy) this problem, the user should disable this option with the **ifconfig** command.*

*For example, to disable the transmit TCP checksum offload feature on interface **en0**, run the following command:*

```
ifconfig en0 -checksum_offload
```

*The user can also use the **ifconfig** command to check the current status of the transmit TCP checksum offload feature. For example, to check the status of this feature on interface **en0**, run the following command:*

```
ifconfig en0
```

```
en0: flags=7e080863,10<UP,BROADCAST,NOTRAILERS,RUNNING,SIMPLEX,MULTICAST,GROUPRT,64BIT,CHECKSUM_OFFLOAD,CHECKSUM_SUPPORT,PSEG>
```

*The **CHECKSUM\_OFFLOAD** flag shown above indicates that the transmit TCP checksum offload feature is currently enabled for interface **en0**. If this feature is disabled, the **CHECKSUM\_OFFLOAD** flag will not be present.*

## IP Security Hardware Acceleration

The 10/100 Ethernet PCI Adapter II (Feature code 4962) offers standards-based IP security and is designed to offload IP Security functions from the AIX base operating system. When the 10/100 Ethernet PCI Adapter II is present in the AIX system, IP Security offload must be enabled. This can be done through SMIT.

After it is enabled, the IP Security stack uses the following capabilities of the adapter:

- Encryption and decryption using DES or Triple DES algorithms
- Authentication using the MD5 or SHA-1 algorithms
- Storage of the security association information

The functions on the adapter will be used instead of the software algorithms. The IP Security hardware acceleration feature is available on level 5.1.0.25 or later of the **bos.net.ipsec.rte** and **devices.pci.1410ff01.rte** software.

## IPX/SPX Protocol Support

IPX/SPX protocol support is provided in the `ipx.base` package. The `ipx.base` package is supported on the 32-bit kernel only.

## Removal of support for `devices.pci.b7105090`

The Ethernet adapter that is supported by the `devices.pci.b7105090` fileset in AIX versions *prior* to AIX 5L Version 5.1 is *not* supported in AIX 5L Version 5.2. After a migration to AIX 5L Version 5.2, or when AIX 5L Version 5.2 is installed and this Ethernet adapter is in the machine, the following messages may display on the console or be written to log files:

```
Method error (/usr/lib/methods/cfgv3boom -l ent1 ):
    0514-068 Cause not known.
```

```
cfgmgr: 0514-621 WARNING: The following device packages are required for
device support but are not currently installed.
```

```
devices.pci.b7105090 Not found on the installation media.
```

Remove the unsupported Ethernet adapter from the machine. This adapter will not be configured by AIX 5L Version 5.2.

## Missing Resource Processing

In a partitioned environment, missing resource processing (through the `diag -a` command) is not performed for processors, memory, L2 Cache, integrated devices, or pluggable adapters that have been moved to another partition. This is done to aid configuration for resources that are moved from one partition to another partition, then moved back to the original partition.

To remove a device from the configuration, log in as the root user, and type `rmdev -d1 device` (where `device` is the name of the device you want to remove).

For more information, view the service hints section within diagnostics (when logged in as the root user or using the CE login). You can view the service information by doing the following:

1. At the command line, type `diag`.
2. When **Diagnostic Operating Instructions** is displayed, press Enter.
3. At the **Function selection** menu, choose **Task Selection**.
4. At the **Task Selection** menu, select **Display Service Hints** and press Enter.

## IBM Directory (LDAP)

To access the latest IBM Directory Version 4.1.0.0 product information, go to:

<http://www.ibm.com/software/network/directory/>

## Installation and Configuration

For information specific to IBM Directory installation and configuration, go to the following Web site:

<http://www.ibm.com/software/network/directory/library>

From this Web site, read the following documents:

- *IBM Directory Version 4.1.0.0 for AIX Installation and Configuration Guide*
- *IBM Directory Version 4.1.0.0 Server Readme*
- *IBM Directory Version 4.1.0.0 Client Readme*
- *IBM Directory Version 4.1.0.0 Readme Addendum*

Before starting `ldapxcfg`, verify that the following links exist, as follows:

```
/usr/ldap/db2 -> /usr/lpp/db2_07_01
/usr/ldap/lib/libdb2.a -> /usr/lpp/db2_07_01/lib/libdb2.a
```

If these links are not present, create the links as follows:

```
ln -s -f /usr/lpp/db2_07_01/lib/libdb2.a /usr/ldap/lib/libdb2.a
ln -s -f /usr/lpp/db2_07_01 /usr/ldap/db2
```

**Installing DB2 UDB7.2:** If reinstalling, force-installing, or installing an update to the DB2 UDB 7.2 fileset **db2\_07\_01.msg.ja\_JP**, you should first remove the **db2\_07\_01.msg.Ja\_JP** and **db2\_07\_01.msg.ja\_JP** filesets.

**Directory Management Tool (DMT):** It is strongly recommended that DMT is run as a user without root authority.

## Administration

After installation of the ldap.client package create the following link:

```
ln -s -f /usr/ldap/lib/aix5/libldapiconv64.a /usr/lib/libldapiconv64.a
```

## IBM Directory with Ja\_JP Locale

In Japanese environment, it is strongly recommended to use IBM Directory in the Ja\_JP locale. In other Japanese locales, the Server Administration GUI doesn't work properly.

## SMBFS

### Restrictions

**SMBFS has these restrictions in the current release:**

- **SMBFS cannot be installed on a 64-bit system.**
- **The IP address on the SMB server cannot be used in the mount command instead of the hostname. If the IP address is used, the connection will fail.**
- **The server's computer name or netbios name has to match its hostname or the connection to the server will fail.**

### Acknowledgements

The SMBFS product includes software developed by Boris Popov.

---

## Graphics

### Spaceball Installation

1. Install SpaceWare as normal.
2. After SMIT starts during installation, select **enable spaceball**. The spaceball should "beep."
3. Select **disable spaceball**.
4. Exit SMIT.
5. Open a shell. (You can use the shell that started the installation process) and type:

```
/etc/SpaceWare/spaceballd -d /dev/tty0 -GL &
```

### GL 3.2 Removed

The GL 3.2 graphics application programming interface (API) has been removed from AIX 5L Version 5.2 and is not supported on this release. Applications that use the GL 3.2 subroutines should migrate to use the OpenGL API subroutines.

---

## System Management

### CSM

You can access the CSM documentation (*Hardware Control Guide*, *Software Planning and Installation Guide*, and the *CSM for AIX Administration Guide*) by going to one of the following Web sites:

<http://www.ibm.com/shop/publications/order>

OR

<http://www.ibm.com/servers/eserver/clusters/library>

**Note:** Before installing CSM, it is imperative that you obtain and read the *Software Planning and Installation Guide* for specific procedural steps to use when installing CSM. Installation of this product will be impossible if you do not use the documented procedures in this book.

## Software Requirements

The following software is required for CSM:

- CSM FOR AIX 5L (5765-F67)

The following APARs are required for CSM on AIX 5L V5.2:

- IY34493
- IY34724
- IY34725

The following APAR is required for CSM on AIX 5L V5.1 nodes:

- IY34707

The cluster management server must be a pSeries machine running AIX 5L Version 5.2. The other machines within the cluster are referred to as managed nodes and can be pSeries machines running AIX 5L Version 5.2, or AIX 5L for POWER Version 5.1 with the 5100-03 recommended maintenance package.

## CD/DVD Automount Facility

AIX 5L Version 5.2 provides a CD/DVD automount facility (**cdromd**) with the **bos.cdmount** fileset. To have the **cdromd** daemon enabled on each system startup, add the following line to the **/etc/inittab** file:

```
cdromd:23456789:wait:/usr/bin/startsrc -s cdromd
```

The **cdromd** daemon can interfere with scripts, applications, or instructions that attempt to mount the CD or DVD device without first checking to see if the device is already enabled. A resource or device busy error will occur in such a condition. Use the **cdumount** or **cdeject** command to unmount the device so that you can mount the device as specified in the program or instructions. Alternatively, use the **cdcheck -m** or **mount** command to determine the current mount point of the device.

For further information, see the **cdromd** command documentation in *AIX 5L Version 5.2 Commands Reference, Volume 2*.

**Note:** An option has been added to the **cdutil** command to suspend the management of a device by the **automounter** daemon without causing the device to eject the media. Type **cdutil -s -k device** to suspend management without ejecting the media. By default, when the **bos.cdmount** fileset is installed, the **cdromd** entry in the **/etc/inittab** file is not enabled.

**Note:** AIX 5L Version 5.2 System Management documentation indicates in error that CDs and DVDs are mounted by default.

**Note:** When the **cdromd** command is enabled and an installation is performed that requires another volume, the CD will be ejected and the user will be prompted to enter the next volume. If this behavior is undesired, stop **cdromd** during installation. Normal behavior during multi-volume installation is to unmount the CD and ask for the next volume (without ejecting).

## SVR4 Printing

For help with configuring and setting up this function see the *Printing for Fun and Profit under AIX 5L* (IBM Redbook number SG24-6018-00) at the following Web site:

<http://www.redbooks.ibm.com/>

## Parallel Printer Cable Selection

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

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

If the output of the **lsdev** command 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 correctly transmit data to high-speed printers. 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.

## Web-based System Manager

### Pattern Matching

Several changes have been made to the pattern matching capability of the **Find** and **Filter** actions. The AIX Version 5.1 behavior of pattern matching was to locate a substring of the pattern. The AIX Version 5.2 behavior allows the use of one or more \* characters to represent complex pattern matches similar to the Korn shell.

Because of this change, patterns used in AIX Version 5.1 will not work the same in AIX Version 5.2. In Version 5.1, a pattern of *abc* would match property values that contained the substring *abc*. In Version 5.2.0, a pattern of *abc* will only match property values that are exactly *abc*. In order to get the Version 5.1 behavior, specify the pattern as *\*abc\**.

In addition to the change in the pattern matching rules, the pattern matching operator in the **Filter** dialog has changed from *contains* to *matches*.

### Viewing Remote Queue Status

In Web-Based System Manager, the **All Print Queues** view for AIX remote printers can inaccurately indicate a problem with a remote queue. Check the actual status of the queue from the command line by typing the following command:

```
enq -q -P queue
```

If the command returns the status that the queue is ready, printing will function normally.

## Tivoli Management Agent (TMA), Version 3.7.1.0

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 Systems customer, do one of the following:

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

- Visit the Tivoli Home page at the following Web address:  
<http://www.tivoli.com>

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## Other Software

This section contains information about other software. Additional information about AIX-supported products is available from the following Web site:

<http://www.ibm.com/servers/aix/products/ibmsw/list/>

## Compilers

### VisualAge C++ Professional for AIX

VisualAge C++ Professional for AIX, V6.0.0 is a fully supported version of this product. Install Version 6.0.0 by using your existing Version 6.0.0 CD's, and then applying APARs IY34533, IY34534, IY34536, IY34538 and IY34623 to complete the installation on AIX 5L Version 5.2.

VisualAge C++ Professional for AIX, V5.0.2 is a fully supported version of this product. Install Version 5.0.2 by using your existing Version 5.0.2 CD's, and then applying APARs IY34533, IY34534, IY34535, IY34537 and IY34623 to complete the installation on AIX 5L Version 5.2.

### C for AIX

C for AIX, V6.0.0 is a fully supported version of this product. Install Version 6 by using your existing Version 6.0.0 CD's, and then applying APARs IY34533, IY34534, IY34536 and IY34623 to complete the installation on AIX 5L Version 5.2.

C for AIX, V5.0.2 is a fully supported version of this product. Install Version 5 by using your existing Version 5.0.2 CD's, and then applying APARs IY34533, IY34534, IY34535 and IY34623 to complete the installation on AIX 5L Version 5.2.

### XL Fortran for AIX

XL Fortran for AIX, Version 8.1 is a fully supported version of this product. Install Version 8.1 by using your existing Version 8.1 CDs, and then applying APARs IY34533, IY34534, IY33757, IY33758 and IY34623 to complete the installation on AIX 5L Version 5.2.

XL Fortran for AIX, Version 7.1.1 is a fully supported version of this product. Install Version 7.1.1 by using your existing Version 7.1.1 CDs, and then applying APARs IY34533, IY34534, IY33755, IY33756 and IY34623 to complete the installation on AIX 5L Version 5.2.

## AIXlink/X.25

### AIXlink/X.25 Version 2.0.1

AIXlink/X.25 Version 2.0.1 is supported on AIX 5L Version 5.2. The **sx25.tcpip** fileset contained in AIXlink/X.25 Version 2.0.1 is not yet supported on AIX 5L Version 5.2.

For more information about supported adapters and about configuration and installation, see the following publications:

- *AIXlink/X.25 LPP Guide and Reference*
- *X.25 Installation and Configuration*

### AIXlink/X.25 Version 1.1.5

AIXlink/X.25 Version 1.1.5 is not supported on AIX 5L Version 5.2.

## AIX Fast Connect Version 3.1.2

AIX Fast Connect documentation is available at the following Web site:

[http://publib16.boulder.ibm.com/doc\\_link/en\\_US/a\\_doc\\_lib/aixbman/fastcon/fastconfrm.htm](http://publib16.boulder.ibm.com/doc_link/en_US/a_doc_lib/aixbman/fastcon/fastconfrm.htm)

The latest updates of the product are described in the `/etc/cifs/README` file, which is installed with AIX Fast Connect.

## Quick Start

1. Install AIX Fast Connect from the distribution CD using the fast path **smitty install\_all**.
2. Use the **smitty smb** fast path to access AIX Fast Connect SMIT menus. Configure AIX Fast Connect for encrypted passwords and add a user.
3. Access the AIX Fast Connect server from a PC client by mapping a network drive. The server name is the same as the AIX host name, and HOME share is available by default.

## Communications Server

If you are using Communications Server for Systems Network Architecture (SNA) support, use one of the following levels:

- Communications Server for AIX, Version 6.1 (6.1.0.0)
- Communications Server for AIX, Version 6 (6.0.1.0)

## DCE for AIX

DCE 3.1 for AIX is not supported for the 64-bit kernel.

## Removal of Support for libipfx.a

AIX 5L no longer provides or supports the services provided in AIX Version 4 by the IPFX (Information Presentation Facility) LPP. In particular, the interfaces provided by the `/usr/lib/libipfx.a` IPFX library are no longer present.

It is possible that an application may still require these services. One indication is that the application fails to load with an error message that it cannot find/load **libipfx.a**. In this case, IBM provides an unsupported copy of the **ipfx.rte** fileset at the following Web site. This fileset is provided as a convenience only. There is no support for this fileset on AIX 5L.

<ftp://aix.software.ibm.com/aix/efixes/ipfxrte/>

---

## Appendix A. AIX 5L Version 5.2 Supported and Unsupported Items

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### System Support

The 64-bit kernel supports 64-bit processors such as (but not limited to) the following POWER-based systems:

- RS/6000 7013 Models S70, S7A
- RS/6000 7015 Models S70, S7A
- RS/6000 7017 Models S70, S7A, S80
- RS/6000 7025 Models H80, F80
- RS/6000 7026 Models H70, H80, M80
- RS/6000 7043 Models 260, 270
- RS/6000 7044 Models 170, 270
- eServer pSeries 680 Model S85
- eServer pSeries 640 Model B80
- eServer pSeries 660 Model 6H1
- eServer pSeries 660 Model 6M1
- eServer pSeries 620 Model 6F1
- eServer pSeries 690
- eServer pSeries 610 Model 6C1
- eServer pSeries 610 Model 6E1
- eServer pSeries 670
- eServer pSeries 630 Model 6C4
- eServer pSeries 630 Model 6E4

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### AIX 5L Version 5.2 Unsupported Devices and Machines

- RS/6000 or OEM hardware based on the MCA bus
- Scalable Parallel (SP) nodes based on the MCA bus
- RS/6000, Power Personal Systems, or OEM hardware based on the PReP architecture
- POWER1, POWER2, POWER Single Chip (RSC), POWER2 Single Chip (P2RSC), and 601 and 603 processors
- PCMCIA device support
- PCI adapters:
  - 2408 F/W SCSI SE, PCI/SHORT/32BIT/5V
  - 2409 F/W SCSI DIFF, EXT ONLY, PCI/SHORT/32BIT/5V
  - 2638 VIDEO CAPTURE(NTSC/PAL/SECAM), PCI/LONG/32BIT/5V
  - 2648 (GXT150P) PCI/SHORT/32BIT/5V, GRAPHICS ADAPTER
  - 2657 S15 GRAPHICS ADAPTER, PCI/SHORT/32BIT/5V, WEITEK P9100
  - 2837 MVP MULTI-MONITOR ADAPTER, PCI/LONG/32BIT/3.3 OR 5V
  - 2854 3D(GXT500P), PCI/LONG/32BIT/3.3 OR 5V, GRAPHICS ADAPTER
  - 2855 3DX(GXT550P), PCI/LONG/32BIT/3.3 OR 5V, GRAPHICS ADAPTER
  - 2856 PCI/SHORT/32BIT/3.3 OR 5V, 7250 ATTACH ADAPTER
  - 8242 10/100BASET ETHERNET PCI/SHORT/32BIT/5V
  - **2751 ESCON CNTRL UNIT, PCI/LONG/32BIT/5V**

- **2947 ARTIC960HX ADPTR + 4PRT MP AIB, PCI/LONG/32BIT/3.3 OR 5V**
- **6310 ARTIC960RXD, DIGITAL TRUNK, PCI/LONG/32BIT/3.3 OR 5V**
- ISA adapters:
  - 2647 VIDEO CAPTURE ENHANCEMENT, ISA/SHORT
  - 2701 4 PORT SDLC, ISA/LONG, EIA 232/V.35/X.21
  - 2931 8-PORT, ISA/LONG, EIA232 ADAPTER/FAN-OUT BOX
  - 2932 8-PORT, ISA/LONG, EIA232/422 ADAPTER/FAN-OUT BOX
  - 2933 128-PORT, ISA/LONG, EIA232 ASYNCH CONTROLLER
  - 2961 1 PORT X.25, SDLC, PPP, ISA/LONG, ADAPTER (C1X)
  - 2971 TOKEN RING ADAPTER, ISA
  - 2981 ETHERNET ADAPTER, ISA, RJ45/BNC
  - 8240 A/M 3COM ETHERNET ISA/SHORT TP ONLY
  - 8241 A/M 3COM ETHERNET ISA/SHORT BNC/AUI
- non-CHRP Graphics Adapters:
  - Gt3/Gt3i
  - Gt4/Gt4e/Gt4i/Gt4x/Gt4xi
  - GXT110P
  - GXT150L/GXT150M/GXT150P
  - GXT155L
  - GXT500
  - GXT500D
  - GXT500P
  - GXT550P (feature code (FC) 2855 only)
  - GXT800M
  - GXT1000
  - MVP MULTIPCI Adapter
  - S15
  - VIDEO OUTPUT OPTION (#3200) (FC 7254)
  - 7250 ATTACH Adapter (FC 2856)

---

## **AIX 5L Version 5.2 Unsupported Functions and Filesets**

- 7318 Model P10/S20 Serial Communications Network Server
- AIX Xstation Manager
- AIX Version 3.2 Network Installation Tools
- Remote Customer Support and Services
- SOMobjects Base Toolkit
- Information Presentation Facility Runtime
- X11.vsm.helps
- X11.vsm.icons
- X11.vsm.rte
- GL 3.2
- power management
- IBM-850 locales
- libipfx.a
- devices.pci.b7105090

- The 7318 Serial Communications Network Server
- Network Terminal Accelerator
- The 9333 Serial Link DASD Subsystem



---

## Appendix B. Notices

This information was developed for products and services offered in the U.S.A.

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