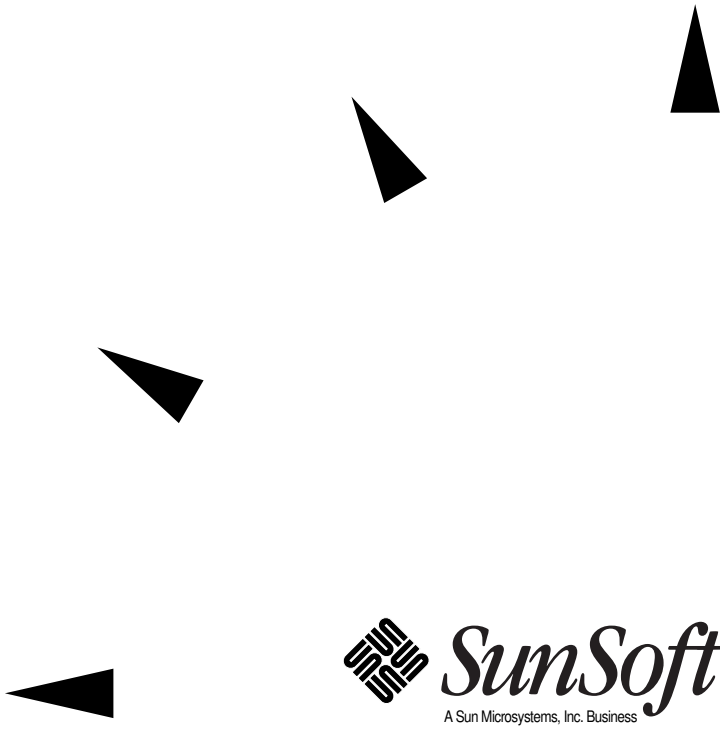
Solaris™ 2.5 (BETA) x86 Driver Update 2 Guide



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About This Book

This document provides information about x86 hardware devices that are now supported on the Solaris™ 2.5 computing environment. Typically, as new drivers become available, they will be bundled with releases on separate (BETA) Driver Update diskettes. You can use the (BETA) Driver Update diskettes to install a new system for the first time, or you can use them to update your installed Solaris 2.5 (BETA) system with new drivers.

Before You Read This Book

This document contains additional device configuration information for newly supported hardware. The importance of properly configured hardware prior to installing Solaris is discussed in the *x86 Device Configuration Guide*. This document assumes you have fully read and understood that guide; Appendix A, "Device Reference Pages," in this document is an addendum to that guide. Likewise, the installation instructions for this (BETA) Driver Update are very brief and serve only to supplement the instructions found in *x86: Installing Solaris Software*.

How This Book Is Organized

A brief description of the contents of the (BETA) Driver Update diskettes is followed by installation instructions for the new drivers, and detailed configuration instructions for the hardware devices that are supported by the new drivers.

Note – Even though the instructions for installing the new drivers are presented first, read and follow the appropriate hardware configuration instructions in Appendix A, "Device Reference Pages," before installing the new drivers. The hardware must be configured properly for the Solaris software to install and run correctly.

Chapter 1, "Solaris 2.5 (BETA) x86 Driver Update 2," provides information about what is new in this release and how to install it.

Chapter 2, "Solaris 2.5 (BETA) x86 Driver Update 2 Video," provides information about the contents, installation instructions, and known problems for the video support in this (BETA) Driver Update.

Appendix A, "Device Reference Pages," provides device configuration information for the hardware supported by the drivers in this (BETA) Driver Update. This appendix should be read and the hardware configured *prior* to installing the (BETA) Driver Update software.

Related Books

You may need to refer to the following books when installing the (BETA) Driver Update:

- *x86 Device Configuration Guide*
  Describes how to configure x86 devices before installing the Solaris software.
- *x86: Installing Solaris Software*
  Describes how to install the Solaris software on x86 systems.
- *x86: Solaris 2.5 Installation Notes*
  Describes late-breaking news about running Solaris 2.5 (BETA) software, including known problems with supported hardware or device drivers.
- *Solaris 2.5 x86 Hardware Compatibility List*
  Contains a list of supported hardware on Solaris 2.5 (BETA) x86 systems.

Solaris 2.5 (BETA) x86 Driver Update 2

1

What's New?

New Device Drivers (SCSI HBA, Network)

Table 1-1 lists the new and updated device drivers in Solaris 2.5 (BETA) x86 Driver Update 2 that contain new functionality not included in the previous (BETA) Driver Update. For a complete list of drivers included in this release, see Table 1-5 on page 6.

Table 1-1 New and Updated Drivers in This (BETA) Driver Update

SCSI HBA Drivers	
`csa`	New driver for the Compaq® SMART SCSI Array Controllers integrated on the system motherboard of the Compaq family of ProSignia™, ProLiant™, and Systempro® Servers
`dpt`	Updated driver to add support for DPT® PM-2024 and PM-2124 PCI host bus adapters, and the PM-3222 and PM-3224 SCSI RAID adapters
`iss`	New driver for the Tricord Systems Intelligent SCSI Subsystem Controllers

Table 1-1 New and Updated Drivers in This (BETA) Driver Update *(Continued)*

`pcscsi`	New driver for the AMD® PCscsi™ (Am53C974), PCscsi II (Am53C974A), and PCnet-SCSI™ (Am79C974) PCI host bus adapters integrated on system motherboards such as the HP® Vectra XU and the Compaq Deskpro™ XL systems
Network Drivers	
`nfe`	New Ethernet driver for the Compaq NetFlex-2 DualPort ENET and NetFlex-2 ENET-TR Controllers

Caution – Occasional kernel panics have been observed on PCN/PCSCSI drivers as found in the HP Vectra XU, Compaq XL560, and Compaq XL590 series of desktops, when using these drivers under simultaneous high network and SCSI loads. We do not recommend using these beta drivers in a production server environment.

Corrections to Known Problems

Updated versions of the following three drivers are included in this distribution to correct some known problems.

Table 1-2 Updated Drivers to Correct Known Problems

`eepro`	Intel® EtherExpress™ Pro
`esa`	Adaptec AIC-7770/AHA-274*x*/AHA-284*x*
`pcn`	AMD PCnet-ISA/PCnet-PCI Ethernet

For a list of the known problems that are fixed in this (BETA) Driver Update, see the `README` files that get installed in the patch directories `/var/sadm/patch/`<*patch number*>, where <*patch number*> is one of the following for this (BETA) Driver Update: `102503-01`, `102504-01`, `102505-01` and `102506-01`.

New MP Support

This (BETA) Driver Update also includes new kernel modules to add support for the Compaq ProLiant (TriFlex) and the Tricord ES4000 MP machines. A manual page for `tpf(7D)` will also be installed.

New Video Support

Table 1-3 contains a list of the new video display adapters supported in Solaris 2.5 (BETA) x86 Driver Update 2 that were not supported in the previous (BETA) Driver Update.

Table 1-3 New Video Support Added in This (BETA) Driver Update

				Resolution and Color Depth									
				800x600		1024x768		1152x900		1280x1024		1600x1200	
Vendor	**Model**	**Bus**	**Chipset**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**
Diamond	Stealth Video DRAM	PCI	S3 868	✓	✓	✓		✓		✓		✓	
	Stealth Video VRAM	PCI	S3 968	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Matrox	MGA Millenium	PCI	STORM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nanao	EizoAccel AA51	ISA	F82C480			✓				✓			
	Nanao HA50/HL50	ISA	S3 928			✓				✓		✓	
	Nanao HA60	ISA	S3 928			✓				✓		✓	
Number Nine	9FX Motion 531	PCI	S3 868	✓	✓			✓		✓			
	9FX Motion 771	PCI	S3 968	✓	✓	✓	✓	✓	✓	✓	✓	✓	
STB	Velocity 64V	PCI	S3 968	✓	✓	✓	✓	✓	✓	✓		✓	

This Video (BETA) Driver Update also adds support for higher resolutions on some display adapters that were supported in Solaris 2.5 (BETA). Table 1-4 lists the ones with additional support. For a complete list of video display adapters supported in this release, see Chapter 2, “Solaris 2.5 (BETA) x86 Driver Update 2 Video.”

Table 1-4 Updated Video Support in This (BETA) Driver Update

				Resolution and Color Depth									
				800x600		1024x768		1152x900		1280x1024		1600x1200	
Vendor	**Model**	**Bus**	**Chipset**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**
Diamond	Viper Pro	PCI	Weitek Power 9100	✓		✓		✓		✓		✓	
	Viper Pro	VLB	Weitek Power 9100	✓		✓		✓		✓		✓	
Intergraph	G91[1]	PCI	Weitek Power 9100	✓		✓		✓		✓		✓	

1. The Intergraph G91 also supports a resolution of 1600x1280 for 8-bit color.

Support for Panning in 8-bit Mode Added

This Video (BETA) Driver Update adds support for panning (on some notebook computers) in 8-bit mode. Previously, this was only supported in 4-bit mode.

Support for 85 kHz Refresh Rate Added

This Video (BETA) Driver Update also adds support for monitors with an 85 kHz refresh rate; previously, 80 kHz was the maximum refresh rate supported.

Modified (BETA) Driver Update Video Distribution and Installation Instructions

The (BETA) Driver Update Video distribution is now a compressed `cpio` file, instead of a diskette image. Consequently, the installation instructions will be slightly different depending on whether you obtained the Video (BETA) Driver Update on diskette or from on-line sources. If you are installing from diskette, you will have a few more steps than those starting with the on-line `cpio` image file. In either case, the installation instructions have changed from the previous (BETA) Driver Update. See Chapter 2, "Solaris 2.5 (BETA) x86 Driver Update 2 Video," for the new instructions.

(BETA) Driver Update Contents

Solaris 2.5 (BETA) x86 Driver Update 2 contains five diskettes labeled:

- "Driver Update 2 CD/Disk Boot for Solaris 2.5 (BETA) x86 Platform"
- "Driver Update 2 Net Boot for Solaris 2.5 (BETA) x86 Platform"
- "Driver Update 2 Distribution for Solaris 2.5 (BETA) x86 Platform"
- "Driver Update 2 Distribution (Video) for Solaris 2.5 (BETA) x86 Platform 1 of 2"
- "Driver Update 2 Distribution (Video) for Solaris 2.5 (BETA) Platform 2 of 2"

The Boot and Distribution diskettes are intended to be used with a Solaris 2.5 (BETA) x86 CD or network boot server. The "Driver Update 2 Distribution (Video) for Solaris 2.5 (BETA) x86 Platform" diskettes can only be used on systems that already have the Solaris 2.5 (BETA) operating environment installed. The contents of the these diskettes are discussed in Chapter 2, "Solaris 2.5 (BETA) x86 Driver Update 2 Video."

(BETA) Driver Update Boot Diskette

The Solaris 2.5 (BETA) operating environment can be installed on x86 systems with one of two new boot diskettes labeled "Driver Update 2 CD/Disk Boot for Solaris 2.5 (BETA) x86 Platform" and "Driver Update 2 Net Boot for Solaris 2.5 (BETA) x86 Platform." The Net Boot diskette is to be used when installing over a network; the CD/Disk Boot diskette is to be used when installing from a CD. Choose the one appropriate for your installation.

Note – Throughout the rest of this document, the name of the Boot diskette will be referred to as "Driver Update 2 Boot for Solaris 2.5 (BETA) x86 Platform" or "(BETA) Driver Update Boot."

This Multiple Device Boot (MDB) diskette contains scripts and configuration files that enable you to boot and install your system using one of the newly supported devices. During installation of the Solaris software, one or more of the (BETA) Driver Update Distribution diskettes will be read.

(BETA) Driver Update Distribution Diskette

The (BETA) Driver Update *Distribution* diskette (labeled "Driver Update 2 Distribution for Solaris 2.5 (BETA) x86 Platform") is read when the (BETA) Driver Update Boot diskette is used to install Solaris. Alternatively, the (BETA) Driver Update Distribution diskette can be used without the boot diskette to add new drivers to an existing x86 system running Solaris 2.5 (BETA).

The (BETA) Driver Update Distribution diskette contains the drivers listed in Table 1-5. A new or updated Section 7D manual page for each of the drivers that added new device support will also be installed in the appropriate `man` page directory during installation.

Table 1-5 New or Updated Device Drivers in This (BETA) Driver Update

SCSI HBA Drivers	
`adp`	Adaptec AIC-7870 driver that supports the AHA-2940, and AHA-2940W, PCI-to-Fast SCSI host bus adapters, and motherboards that integrate Adaptec AIC-7870 controller chips, such as the DECpc™ XL 590 and the Samsung Magic Power SPC8500P
`corvette`	IBM® SCSI-2 Fast/Wide Adapter/A
`csa`	Compaq SMART SCSI Array Controllers integrated on the system motherboard of the Compaq family of ProSignia, ProLiant, and Systempro Servers
`dpt`	Updated driver to correct some known problems and add support for DPT PM-2024 and PM-2124 PCI host bus adapters, and the PM-3222 and PM-3224 SCSI RAID adapters
`dsa`	Updated Dell® SCSI Array driver to correct some known problems
`esa`	Updated Adaptec AIC-7770/AHA-274*x*/AHA-284*x* driver to correct some known problems
`iss`	Tricord Systems Intelligent SCSI Subsystem Controllers
`mlx`	Updated driver to support IBM DMC960 RAID controllers (IBM SCSI-2 RAID and IBM SCSI-2 Fast/Wide Streaming-RAID Adapter/A)
`pcscsi`	AMD PCscsi (Am53C974), PCscsi II (Am53C974A), and PCnet-SCSI (Am79C974) PCI host bus adapters integrated on system motherboards such as the HP Vectra XU and the Compaq DeskPro XL systems
Network Drivers	
`eepro`	Intel EtherExpress PRO Ethernet
`elink`	Updated 3Com® EtherLink® 16 (3C507) driver to correct some known problems
`nee`	Novell/Eagle Technology NE3200 Ethernet
`nei`	Novell/Eagle Technology NE2000, NE2000plus Ethernet
`nfe`	Compaq NetFlex-2 DualPort ENET and NetFlex-2 ENET-TR Controllers

Table 1-5 New or Updated Device Drivers in This (BETA) Driver Update *(Continued)*

`pcn`	AMD PCnet™ driver to support integrated motherboards based on the AMD PCnet-ISA and PCnet-PCI controller chips
`riles`	Racal InterLan® ES3210/ES3210 TP Ethernet
`smce`	Updated SMC® Elite32 driver to correct some known problems

Caution – Occasional kernel panics have been observed on PCN/PCSCSI drivers as found in the HP Vectra XU, Compaq XL560, and Compaq XL590 series of desktops, when using these drivers under simultaneous high network and SCSI loads. We do not recommend using these beta drivers in a production server environment.

This (BETA) Driver Update also includes new kernel modules to add support for the Compaq ProLiant (TriFlex) and the Tricord ES4000 MP machines. A manual page for `tpf(7D)` will also be installed.

For a complete list of the known problems that are fixed in this (BETA) Driver Update, see the `README` files that get installed in the patch directories `/var/sadm/patch/`<*patch number*>, where <*patch number*> is one of the following for Solaris 2.5 (BETA) x86 Driver Update 2: `102503-01`, `102504-01`, `102505-01` and `102506-01`.

Note – If you are installing Solaris 2.5 (BETA) on one the following Intergraph® systems, you will need to modify the (BETA) Driver Update boot diskette to workaround a known PCI/EISA I/O space overlap problem on systems that contain an NCR® chip:

ISMP22 Server
TD-5 Personal Workstation
TD-4 Personal Workstation
100 MHz TD-3 Personal Workstation

This must be done prior to installing the Solaris 2.5 (BETA) operating environment. See "Modifying the Solaris (BETA) Driver Update Boot Diskette" on page 9.

Note – The Novell® NE2000 and NE2000plus are sensitive to autoprobing by other drivers and require autoprobe reset sequences that may disturb other cards. For this reason, the Solaris `nei` driver is disabled by default, and special steps must be taken to enable it. See "Modifying the Solaris (BETA) Driver Update Boot Diskette" on page 9 or "Enabling Support for the Novell NE2000/NE2000plus After Installing the (BETA) Driver Update" on page 14.

Note – Due to conflicts, the IBM SCSI-2 Fast/Wide Adapter/A should not be installed until the Solaris `mcis` driver is disabled. See "Modifying the Solaris (BETA) Driver Update Boot Diskette" on page 9 or "Disabling Drivers After Installing the (BETA) Driver Update" on page 15.

Note – Certain large server class machines (such as the Compaq Proliant series), configured with a large amount of EISA nvram information, or large amounts of memory, may sometimes cause the Solaris `ufsboot` program to fail with the following message after installation (see Bugid 1206600): Boot: scratch memory overflow. The workaround is to run the INSTDRV.BAT DOS batch script on the (BETA) Driver Update Boot Diskette prior to installation. This disables device drivers for which hardware is not installed or configured at boot time, by placing explicit exclude statements in the `/etc/system` file. Reenabling device drivers simply involves removing the needed exclude statements from `/etc/system`, and performing a reconfigure reboot. See "Modifying the Solaris (BETA) Driver Update Boot Diskette" on page 9 for details.

(BETA) Driver Update Distribution (Video) Diskette

See Chapter 2, "Solaris 2.5 (BETA) x86 Driver Update 2 Video," for a complete list of the video display adapters supported in this release.

Solaris 2.5 (BETA) Driver Update 2 Release Notes

How to Choose a Boot Disk

The choice of PCI slot or EISA slot and the BIOS ROM base address may affect which disk your system chooses as the boot disk. If you want to be able to boot automatically when your computer is turned on, be sure to choose the right disk for your system.

Known Problems

Caution – The installation program's default size for the root file system may not be large enough to produce a working system on some PCI-based systems with new or updated drivers. When installing this (BETA) Driver Update, do not accept the default file system partitioning. Instead, press F4 to Customize the file system partitions, then allocate at least 20 Mbytes for the file system.

- There is a known problem with the Tricord MP module that causes the machine to fail when a PS/2® mouse is attached to it.
  Workaround: Do not attach a PS/2 mouse to the Tricord machine. Use the PS2/Serial combination mouse as a serial mouse.
- **(1203834)** Installing over a network using a 3Com EtherLink 16/16 TP adapter will not work if the card is set to TURBO mode.
  Workaround: Set the card to non-TURBO mode before the initial network installation. Once installed, set it back to TURBO mode to take advantage of maximum performance during normal operation.
- **(1207598)** Attempting to install over the network on some systems with a built-in PCnet card may cause system panics while trying to boot over the network. The panics have been observed on the Hewlett-Packard HP Vectra and the Intergraph TD-2.

Modifying the Solaris (BETA) Driver Update Boot Diskette

Before you install the Solaris operating environment on your system, it may be necessary to modify the (BETA) Driver Update Boot diskette to remove or enable certain drivers that conflict with each other. For example:

- There is a known PCI/EISA I/O space overlap problem on systems that contain an NCR chip. This affects the Intergraph ISMP22 Server and the TD-5, TD-4, and 100 MHz TD-3 Personal Workstations.
- The Novell NE2000/NE2000plus Ethernet adapters are sensitive to autoprobing by other drivers and require reset sequences that may disturb other network cards. For this reason, the `nei` driver is disabled by default, and special steps must be taken to enable it.
- The Solaris `mcis` driver interferes with the proper operation of the newly supported IBM SCSI-2 Fast/Wide Adapter/A. To avoid conflicts, the Solaris `mcis` driver must be disabled before the IBM SCSI-2 Fast/Wide Adapter/A can be installed.
- The Solaris `elink` driver may interfere with the proper operation of PCnet-ISA adapters. If you are installing the Solaris software over a network that uses a PCnet-ISA adapter, and you experience problems with the network hanging, it may be necessary to exclude the `elink` driver from the (BETA) Driver Update Boot diskette before attempting to install again.

There are scripts on the (BETA) Driver Update Boot diskette for these purposes. The diskette must be modified using DOS. As a precaution, you should make a backup of the original Boot diskette prior to running the special script.

1. **Boot DOS on your system.**
2. **Insert a blank 3.5–inch diskette into drive A: and format it:**
   `format a:`
3. **Insert the (BETA) Driver Update *Boot* diskette into drive A: and make a copy of it:**
   `diskcopy a: a:`
4. **Store your original Boot diskette in a safe place.**
5. **Label the copy of the Boot diskette as "Modified."**
   For example:
   - "Modified Driver Update 2 Boot for Solaris 2.5 (BETA) x86 Platform (Intergraph Systems)," or
   - "Modified Driver Update 2 Boot for Solaris 2.5 (BETA) x86 Platform (NE2000/NE2000plus)," or

Note: Solaris 2.5 (BETA) x86 Driver Update 2 contains two Boot diskettes. Remember to include CD/Disk or Net on the label of the modified Boot diskette.

- "Modified Driver Update 2 Boot for Solaris 2.5 (BETA) x86 Platform (IBM SCSI-2 Fast/Wide Adapter/A)," or
- "Modified Driver Update 2 Boot for Solaris 2.5 (BETA) x86 Platform (PCnet-ISA)."

6. **Put the modified Boot diskette back into drive A:.**

7. **Change to drive A: (remember DOS is still running):**
   `a:`

8. **Run the batch command file.**
   - To support the Intergraph ISMP22, TD-5, TD-4, or 100 MHz TD-3, run the `intrgrph.bat` command file:
     `intrgrph`
   - For NE2000/NE2000plus support, run the `nov2000.bat` command file:
     `nov2000`
   - For IBM SCSI-2 Fast/Wide Adapter/A support, run the `corvette.bat` command file:
     `corvette`
   - To avoid PCnet-ISA conflicts, run the `pcnet.bat` command file:
     `pcnet`

Now the Boot diskette is prepared to install the Solaris software on your system. If you have not already done so, configure your hardware as described in Appendix A, "Device Reference Pages."

Installing Solaris Using the (BETA) Driver Update Diskettes

To install Solaris 2.5 (BETA) on an x86 system, follow the instructions in *x86: Installing Solaris Software* using the diskette labeled "Driver Update 2 Boot for Solaris 2.5 (BETA) x86 Platform."

The procedure for installing Solaris using the (BETA) Driver Update Boot diskette is almost the same as that described in *x86: Installing Solaris Software*. There will be many times during the early booting process when the system will read data from the diskette, but the sequence of interaction with the user

remains the same. Early in the boot process there will also be warning messages for each new driver whose device is not on the system being installed. The warning messages will look like the following:

```
Warning: forceload of drv/xxx failed.
```

Such warning messages are expected and can be ignored.

Before the installation program begins to install the Solaris software, you will be able to choose whether you want the system to reboot after installing the software.

Late in the install process, after all the standard packages have been installed, new driver packages will be installed from the (BETA) Driver Update Distribution diskette. At the start of that phase of the installation, one of the install scripts will ask you to insert the (BETA) Driver Update Distribution diskette into the drive. After the new driver packages have all been added, the script will ask you to remove the diskette from the drive. In each case, it will wait for you to perform the requested action and then press Enter.

After this is accomplished, the system will reboot as usual (unless you chose the option not to reboot after installing the software). When it comes up, the new device drivers should be completely installed and functional.

To install the new video display support, see Chapter 2, "Solaris 2.5 (BETA) x86 Driver Update 2 Video," for instructions.

Adding New Drivers After Solaris Is Installed

If you already have the Solaris 2.5 (BETA) software installed, the simplest way to add one of the new drivers to your system is to obtain the (BETA) Driver Update *Distribution* diskette and install it as a patch on your Solaris 2.5 (BETA) x86 system.

Note – Before adding new drivers, the newly supported hardware devices should be installed and configured according to the instructions in Appendix A, "Device Reference Pages."

Follow these procedures to install the new drivers:

1. **Insert the (BETA) Driver Update *Distribution* diskette into drive 0.**
2. **Become root.**
3. **Use `cpio` to copy files off the diskette and run the installation script.**
   The following commands assume Volume Management is running on your system. If it isn't, `volcheck` should *not* be run and the device name of the diskette drive needs to be replaced with `/dev/diskette0`.

To see if Volume Management software is running, type:
`ps -e | fgrep vold`
For more information about managing diskettes and drives, see *System Administration Guide, Volume I*.

```
# mkdir /tmp/Drivers
# cd /tmp/Drivers
# volcheck &
# cpio -iduBI /vol/dev/aliases/floppy0
# ./installdu.sh
```

4. **Remove the diskette from drive 0, and follow the instructions on the screen to shut down the system.**
   The instructions include how to restart the system.
5. **A second `reboot` may be required if you have installed new hardware that uses a new network driver. See "Replacing a Network Card" on page 16.**

When the system comes up, the new device drivers should be completely installed and functional. However, there may be additional steps you need to take:

- If you want to support an NE2000 or NE2000plus Ethernet adapter, you must enable the driver before the card is installed and configured. See "Enabling Support for the Novell NE2000/NE2000plus After Installing the (BETA) Driver Update" below.
- If you want to support an IBM SCSI-2 Fast/Wide Adapter/A, you must disable the Solaris `mcis` driver before the adapter is installed and configured. See "Disabling Drivers After Installing the (BETA) Driver Update" on page 15.
- If you have a PCnet-ISA adapter and you experience network problems, you may need to disable another driver so that it won't interfere with the operation of the PCnet-ISA adapter. See "Disabling Drivers After Installing the (BETA) Driver Update" on page 15.

- If you are replacing a network card with a newly supported network card, see "Replacing a Network Card" on page 16.

To install the new video display support, see Chapter 2, "Solaris 2.5 (BETA) x86 Driver Update 2 Video," for instructions.

Enabling Support for the Novell NE2000/NE2000plus After Installing the (BETA) Driver Update

If you already have the Solaris 2.5 (BETA) operating environment running on your system and you now want to add an NE2000 or NE2000plus Ethernet card, you need to disable the conflicting drivers that are already installed on your system. This must be done *prior* to installing the NE2000/NE2000plus card but *after* installing the Solaris 2.5 (BETA) x86 Driver Update 2 software.

1. **Follow the instructions under "Adding New Drivers After Solaris Is Installed" on page 12 of this document to install Solaris 2.5 (BETA) x86 Driver Update 2.**

2. **Become root.**

3. **Use a text editor (such as `vi`) to edit the `/etc/system` file, and add the following lines:**

```
exclude: eepro
exclude: el
exclude: elink
exclude: iee
exclude: pcn
exclude: smc
exclude: tiqmouse
```

To comment out a line in the `/etc/system` file, place an asterisk * at the beginning of the line.

To uncomment a line in the `/etc/system` file, remove the asterisk * at the beginning of the line.

4. **Remove or comment out the following lines:**

```
exclude: nei
forceload: drv/eepro
forceload: drv/el
forceload: drv/elink
forceload: drv/iee
forceload: drv/pcn
forceload: drv/smc
```

5. **Add or uncomment the following line:**

```
set nei:nei_forceload = 1
```

6. **Save your changes and exit the editor.**
7. **Shut down the system and power it off.**
8. **Install the NE2000 or NE2000plus card and configure it according to the information in Appendix A, "Device Reference Pages."**
9. **Reboot the system.**

Note – Upon reboot, the Ethernet cards listed in the device page for "Novell NE2000, NE2000plus Ethernet" in Appendix A, "Device Reference Pages," will no longer be recognized by the Solaris software and cannot be used in the system with the NE2000/NE2000plus.

---

10. **If the newly installed NE2000/NE2000plus Ethernet card is replacing another network card, there is an additional step you must take. See "Replacing a Network Card" on page 16.**

Disabling Drivers After Installing the (BETA) Driver Update

It is sometimes necessary to disable certain Solaris drivers so that they will not interfere with the proper operation of other hardware. For example:

- The Solaris `mcis` driver interferes with the proper operation of the IBM SCSI-2 Fast/Wide Adapter/A. Before you can install and configure this newly supported adapter, the `mcis` driver must be disabled.
- The Solaris `elink` driver may interfere with the proper operation of PCnet-ISA adapters. If you already have Solaris installed on your system, and after installing this (BETA) Driver Update you experience network problems with your PCnet-ISA adapter, try disabling the Solaris `elink` driver.

To disable a driver requires modifying a system file and rebooting.

1. **Install the (BETA) Driver Update by following the instructions under "Adding New Drivers After Solaris Is Installed" on page 12.**
2. **Become root.**
3. **Use a text editor (such as `vi`) to edit the `/etc/system` file, and add one of the following lines.**
   - For SCSI-2 Fast/Wide Adapter/A support, add the line:
     ```
     exclude: mcis
     ```

- For PCnet-ISA support, add the line:
  `exclude: elink`

To comment out a line in the `/etc/system` file, place an asterisk * at the beginning of the line.

4. **Remove or comment out one the following lines.**
   - For IBM SCSI-2 Fast/Wide Adapter/A support, remove or comment out the line:
     `forceload: drv/mcis`
   - For PCnet-ISA support, remove or comment out the line:
     `forceload: drv/elink`
5. **Save your changes and exit the editor.**
6. **Shut down the system and power it off.**
7. **Install the IBM SCSI-2 Fast/Wide Adapter/A or the PCnet-ISA adapter and configure it according to the information in Appendix A, "Device Reference Pages."**
8. **Reboot the system.**

Note – Upon reboot, the IBM Micro Channel® SCSI adapter will no longer be recognized by the Solaris software, and it cannot be used in a system with the IBM Micro Channel SCSI-2 Fast/Wide Adapter/A.

Note – Upon reboot, the 3Com EtherLink 16 (3C507) Ethernet card will no longer be recognized by the Solaris software, and it cannot be used in a system with the PCnet-ISA.

---

9. **If the newly installed PCnet-ISA card is replacing another network card, there is an additional step you must take. See the next section, "Replacing a Network Card."**

Replacing a Network Card

If you have replaced your network card with one that uses a different network driver (for example, `eepro`), you will need to rename the `/etc/hostname.`*`olddriver`*`0` file to `/etc/hostname.`*`newdriver`*`0` before

rebooting the second time. For example, if you have replaced a 3Com EtherLink III card with an Intel EtherExpress PRO card, you would need to run the following command as root:

```
# mv /etc/hostname.elx0 /etc/hostname.eepro0
```

Now perform a reconfiguration boot to make your changes take effect:

```
# touch /reconfigure
# reboot
```

1

Solaris 2.5 (BETA) x86 Driver Update 2 Video

2

A brief description of the contents of the video support included in Solaris 2.5 (BETA) x86 Driver Update 2 is followed by installation instructions and known problems. Read through the entire chapter once before installing the (BETA) Driver Update Video.

(BETA) Driver Update Video Contents

Solaris 2.5 (BETA) x86 Driver Update 2 Video contains two diskettes labeled: "Driver Update 2 Distribution (Video) for Solaris 2.5 (BETA) x86 Platform." The Video Distribution diskettes are intended to be used on Solaris 2.5 (BETA) x86 systems only. Table 2-1 contains a list of video display adapters supported in this (BETA) Driver Update. While this table includes the resolution and color depth capabilities of each adapter, it is important to note that the resolution and color depth you select are also dependent on the capabilities of your monitor and the amount of video memory on the card. See *x86 Device Configuration Guide* for more information.

Note – Throughout the rest of this chapter, the name of the Video diskette will be referred to as "(BETA) Driver Update Video."

Table 2-2 on page 21 lists the additional notebook display support included in this (BETA) Driver Update. Note that the resolution and color depth capabilities may depend on whether an external monitor is attached.

Table 2-1 Video Display Adapters Supported in This (BETA) Driver Update

Vendor	Model	Bus[3]	Chipset	Resolution and Color Depth									
				800x600		1024x768		1152x900		1280x1024		1600x1200	
				8	24	8	24	8	24	8	24	8	24
AST	Manhattan 5090P[1]	—	Cirrus Logic 5424	✓									
Cirrus Logic	5420 chipset w/512Kbyte DRAM			✓									
	5424 chipset w/512Kbyte DRAM[1]			✓									
Compaq	ProLiant	—	Cirrus Logic 5420	✓									
	ProSignia	—	Cirrus Logic 5420	✓									
Diamond	Stealth Video DRAM	PCI	S3 868	✓	✓	✓		✓		✓		✓	
	Stealth Video VRAM	PCI	S3 968	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Viper Pro	PCI	Weitek Power 9100	✓		✓		✓		✓		✓	
	Viper Pro	VLB	Weitek Power 9100	✓		✓		✓		✓		✓	
Intergraph	G91[2]	PCI	Weitek Power 9100	✓		✓		✓		✓		✓	
Matrox	MGA Millenium	PCI	STORM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Micronics	Mpower 4 plus	—	ATI Mach64	✓		✓							
Nanao	EizoAccel AA51	ISA	F82C480			✓				✓			
	Nanao HA50/HL50	ISA	S3 928			✓				✓		✓	
	Nanao HA60	ISA	S3 928			✓				✓		✓	
Number Nine	9FX Motion 531	PCI	S3 868	✓	✓			✓		✓			
	9FX Motion 771	PCI	S3 968	✓	✓	✓	✓	✓	✓	✓	✓	✓	
STB	Velocity 64V	PCI	S3 968	✓	✓	✓	✓	✓	✓	✓		✓	

1. Video adapters based on the Cirrus Logic 5424 chipset with 512Kbyte DRAM may not perform well in 800x600x256 mode, particularly if the selected monitor refresh rate is 60 Hz or higher. See the release note on page 21.

2. The Intergraph G91 also supports a resolution of 1600x1280 for 8-bit color.

3. "—" Indicates onboard video controll

Table 2-2 New Video Support for Notebook Displays in This (BETA) Driver Update

Vendor	Model	Chipset	Resolution and Color Depth E=With External Monitor I=With Internal Monitor					
			640x480		800x600		1024x768	
			8	24	8	24	8	24
Ergo	Power Brick	Western Digital 90C24	**I**					
NEC	Versa M75C	Chips&Technology 65540	**E,I**		**E**		**E**	
	Versa M75HC	Chips&Technology 65545	**E,I**		**E,I**		**E**	
Toshiba	4900CT	Chips&Technology 65545	**E,I**		**E**		**E**	

Caution – Even though many notebook computers are capable of supporting external monitors at a resolution higher than 640x480, you should not change the default video resolution on a notebook computer to be anything other than what the internal monitor can support. Higher resolution video modes do not work on the integrated LCD screen; if you happen to start up the window system without an external monitor, you may not be able to see anything on the LCD screen. In some cases, this may even damage your LCD screen. See "Configuring Secondary Displays" on page 25.

(BETA) Driver Update Video Release Notes

- This Video (BETA) Driver Update also adds support for monitors with an 85 kHz refresh rate; previously, 80-kHz was the maximum refresh rate supported.
- This Video (BETA) Driver Update adds support for panning on the NEC® Versa™ M75C, NEC Versa M75HC, and Toshiba® 4900CT notebook computers in 8-bit mode. Previously, this was only supported in 4-bit mode.
- Video adapters based on the Cirrus Logic 5424 chipset with 512Kbyte DRAM may not perform well in 800x600x256 mode under the Solaris OpenWindows™ environment. This is particularly noticeable if the selected monitor refresh rate is 60 Hz or higher. This is a hardware limitation. To

obtain the best performance in 800x600x256 mode, choose the Multifrequency—38kHz monitor type when configuring the window system.

- This (BETA) Driver Update Video release also includes software fixes to some known problems. See the `README` file in the directory `/var/sadm/patch/102535-02` for a list of the problems fixed.

Known Problems

- **(1211889, 1210704)** The Matrox® Millenium card may exhibit problems with some high resolutions, color depths, and refresh rates.
- The Matrox Millenium card with 4MB of memory will not run OpenWindows multiple times at resolution of 1600x1200 for 8-bit depth and 85kHz refresh rate.
  Workaround: Either reboot machine to restart OpenWindows at this resolution and refresh rate, or use different resolution or refresh rate.
- **(1211889)** The Matrox Millenium card with 8MB of memory does not display properly for the 85kHz refresh rate, at resolutions of 800x600 or 1600x1200 for 8-bit depth, or at resolution of 1024x768 for 24-bit depth.
  Workaround: Choose slower refresh rate or other resolutions.
- **(1200644)** When using an LCD screen at a resolution of 800x600 in 256 color mode, sometimes the image in the upper left portion of the screen will expand to fill the entire screen.
  Workaround: To adjust the size and position of the screen, press the screen-switching function key three times. For example, press the Fn key and the LCD/CRT key simultaneously. Refer to your notebook computer manual to see how your particular machine operates.

Most notebook computers have a function key that can be used to switch between the LCD and the external monitor, or simultaneously display both.

- **(1214680)** The `p9100` driver cannot be configured more than once using `kdmconfig`. The initial configuration of the Diamond Viper SE™ PCI card results in a usable OpenWindows system, but if a Viper card reconfiguration using `kdmconfig` is attempted, it will fail.

Installing (BETA) Driver Update Video

The contents of the (BETA) Driver Update Video diskette is installed as patches on your Solaris 2.5 (BETA) x86 system. To do this, you must already have Solaris 2.5 (BETA) installed and running on your x86 system.

Note – When installing the Solaris 2.5 (BETA) software on a system that contains one of the newly supported video cards listed in Table 2-1, if you choose to configure the window system, your card will not be included yet in the list of supported display adapters. However, you can still use a graphics-based interface to the Solaris installation program by choosing the standard 16 colors, 640x480 VGA. Alternatively, you can use a character-based interface by choosing not to configure the window system when asked.

After installing the (BETA) Driver Update software, the installation script will give you the option of configuring the window system by running the `kdmconfig` program. If you choose to do this, you will be asked to configure your keyboard, mouse, and video card again; however, this time you will be able to select from a list that includes the newly supported video cards.

1. **Become root.**

Note – The (BETA) Driver Update Video is now released as a compressed `cpio` image file. Consequently, if you are installing from diskettes, there are a few extra steps that need to be taken to retrieve the files. If you have obtained the (BETA) Driver Update Video image file from on-line sources and you are not installing the (BETA) Driver Update Video from diskettes, you can proceed directly to Step 5.

2. **Insert the first "Solaris 2.5 (BETA) x86 Driver Update 2 Distribution (Video) 1 of 2" diskette into drive 0.**

3. **First use `cpio` to copy the compressed `cpio` image file off the diskettes.** If Volume Management is running, turn it off temporarily.

```
# /etc/init.d/volmgt stop
# mkdir /tmp/Drivers
# cd /tmp/Drivers
# cpio -iduBI /dev/rdiskette0
  End of Medium on "input"
  Change to part 2 and press RETURN key [q]
```

4. **Remove the first (BETA) Driveer Update Video Diskette and insert the second (BETA) Driver Update Video diskette into the drive and press Enter.**
   `cpio` will report the number of blocks copied.

5. **Now use `zcat` and `cpio` to copy the files from the compressed `cpio` image file, and run the install script.**

The name of the compressed `cpio` image file is `vbdu?image.Z`, where *?* represents the (BETA) Driver Update number.

```
# zcat vbdu* | cpio -icudB
# ./installdu.sh
```

6. **If Volume Management was turned off in step 3, you may turn it on again.**

```
# /etc/init.d/volmgt start
```

7. **Configure the window system.**
   After the (BETA) Driver Update Video software has been installed, the installation script asks if you want to configure the window system. If you do not want to configure the window system at this time, you must run the following commands after the installation script ends *and* before you start the OpenWindows software:

```
# kdmconfig -u
# kdmconfig -cf
```

   If you want to configure the window system at this time, the `kdmconfig` program will be started for you. The `kdmconfig` program will ask you to configure your keyboard, mouse, and display adapter. The list of display adapters will appear alphabetically by vendor. To quickly scroll through the list, type the first few letters of the vendor name. For example, type `Mi` to get to the "`Micronics Mpower4 Plus`" entry. Some of the names of display adapters on the list may be followed by the amount of video memory on the card. For example, "`Diamond Stealth 64 (2MB)`" indicates 2 Mbytes of memory on the Diamond Stealth 64™ card. Be sure to select an entry that matches your configuration. After you have selected your display adapter, you may be asked additional questions about screen size, color depth, display resolution, and monitor type.

8. **Select the Correct Screen Size, Color Depth, Resolution, and Monitor from the list displayed by** `kdmconfig`**.**
   Selecting '8' for color depth means your adapter is capable of 8-bit color (256 colors), whereas '24' means 24-bit color (2^{24} or 16,777,216 colors). After choosing the monitor's screen size, color depth, and resolution, you will be shown a list of supported monitors (unless you have already chosen one of the Diamond Viper card entries). If you have a multisync/multifrequency monitor, check the manufacturer's documentation to find out the maximum horizontal synchronization rate supported by the monitor. For example, if you have a ViewSonic® 17 monitor, which has a maximum horizontal sync rate of 82 kHz, select 'MultiFrequency-80kHz (up to 1600x1200@60 Hz)' as the monitor type.

Note – In order to support 1152x900 or 1280x1024 resolution on the Intergraph TD-1 display adapter, you must select an interlaced monitor type when configuring the Solaris window system or it will not function properly. Choose 'MultiFrequency-56kHz (up to 1280x1024 interlaced)' as the monitor type.

9. **Remove the diskette from drive 0.**

10. **Clean up the temporary workspace.**

```
# cd /
# rm -fr /tmp/Drivers
```

Installation of (BETA) Driver Update Video is complete and you can now run the `openwin` command to start the window system.

Configuring Secondary Displays

These instructions allow you to configure a secondary display for notebook computers that have an external monitor without changing the default video resolution.

Caution – Even though many notebook computers are capable of supporting external monitors at a resolution higher than 640x480, you should not change the default video resolution on a notebook computer to be anything other than what the internal monitor can support. Higher resolution video modes do not

work on the integrated LCD screen; if you happen to start up the window system without an external monitor, you may not be able to see anything on the LCD screen. In some cases, this may even damage your LCD screen.

The configuration that will be installed will define display 0 as the internal monitor, and display 1 as the external monitor. The external monitor will be configured for 1024x768, 256 colors.

1. **Become root.**

2. **Change to the** `/etc/openwin/server/etc` **directory.**

```
# cd /etc/openwin/server/etc
```

3. **Copy the appropriate OpenWindows configuration file for your notebook to the file** `OWconfig`**.**

   a. **If you have a Toshiba 4900CT notebook computer, type:**
   `cp /usr/openwin/server/etc/OWconfig.4900ct  OWconfig`

   b. **If you have an NEC® Versa™ M75C, type:**
   `cp  /usr/openwin/server/etc/OWconfig.vm75c  OWconfig`

   c. **If you have an NEC Versa M75HC, type:**
   `cp  /usr/openwin/server/etc/OWconfig.vm75hc  OWconfig`

To perform a reconfiguration boot, type the commands:
`touch /reconfigure`
`reboot`

Note – The OpenWindows configuration file that is being installed assumes you are using a built-in PS/2 style mouse. If you connect a PS/2 style mouse to the external mouse/keyboard port, you will need to perform a reconfiguration boot before bringing up the OpenWindows environment.

4. **Exit from superuser status.**

5. **Start the OpenWindows software, indicating which display to use.**

   a. **To use the internal display, type:**
   `openwin -display :0`

   b. **To use the external display, type:**
   `openwin -display :1`

Device Reference Pages A

This appendix supplements Appendix B, "Device Reference Pages," in *x86 Device Configuration Guide*. It includes necessary device configuration information for hardware supported by the new or updated drivers.

Use the following table to locate information about your hardware and proceed directly to those pages.

SCSI Host Bus Adapters	**Solaris Driver**	
Adaptec AIC-7870/AIC-7871/AHA-2940 PCI HBAs	`adp`	*page 30*
AMD PCscsi, PCscsi II, PCnet-SCSI PCI HBAs	`pcscsi`	*page 32*
Compaq SMART SCSI Array Controller	`csa`	*page 33*
DPT PM-2011/PM-2021 ISA HBAs	`dpt`	*page 34*
DPT PM-2012B EISA HBA	`dpt`	*page 36*
DPT PM-2022/PM-2122/PM-3222 EISA HBAs	`dpt`	*page 38*
DPT PM-2024/PM-2124/PM-3224 PCI HBAs	`dpt`	*page 41*
IBM DMC960 RAID Micro Channel HBAs (IBM SCSI-2 RAID, IBM SCSI-2 Fast/Wide Streaming-RAID Adapter/A)	`mlx`	*page 43*
IBM Micro Channel SCSI-2 Fast/Wide Adapter/A	`corvette`	*page 45*
Tricord Systems Intelligent SCSI Subsystem (ISS) HBA	`iss`	*page 47*
Network Adapters	**Solaris Driver**	

AMD PCnet Ethernet (PCnet-ISA, PCnet-PCI)	`pcn`	*page 49*
Compaq NetFlex-2 DualPort ENET, NetFlex-2 ENET-TR EISA Controllers	`nfe`	*page 52*
Intel EtherExpress PRO	`eepro`	*page 51*
Novell NE2000, NE2000plus Ethernet	`nei`	*page 54*
Novell NE3200 EISA Ethernet	`nee`	*page 58*
Racal InterLan ES3210/ES3210 TP EISA Ethernet	`riles`	*page 60*

Part 1 — SCSI Host Bus Adapters

Adaptec AIC-7870/AIC-7871/AHA-2940 PCI HBAs

Description

The Adaptec AHA-2940 and AHA-2940W cards are PCI-to-Fast SCSI controllers based on the Adaptec AIC-7870 or AIC-7871 chips.

Device Configuration

Configuring the Device

1. **Ensure that the SCSI bus is properly terminated.**
2. **Set up the IRQ for the controller by using the CMOS setup utility supplied with the motherboard (if this feature is available for your computer).**
   If you have more than one controller (or an embedded controller), use one IRQ per controller. Enable bus mastering for the slot(s) with your host bus adapter(s), when the choice is given.
3. **Run the vendor-supplied configuration utility by pressing Ctrl-A at boot time.**
4. **Ensure that support for more than two DOS drives is disabled.**
5. **For older drives, tapes, and most CD-ROM devices, make sure the maximum SCSI data transfer speed is set to 5.0 Mbytes per second.**
6. **Enable support for disks larger than 1 gigabyte if applicable.**
7. **Make sure there are no IRQ conflicts between ISA cards on your system and PCI controllers.**

Known Problems and Llimitations

- On some PCI systems with an Adaptec 294*x* card installed, problems with user-level programs have been observed on a number of PCI motherboards, including the following models:
  - PCI motherboards with a 60 MHz Pentium™ chip, with PCI chipset numbers S82433LX Z852 and S82434LX Z850. The part number of the Intel motherboard is AA616393-007.

- PCI motherboards with a 90 MHz Pentium chip, with PCI chipset numbers S82433NX Z895, S82434NX Z895, and S82434NX Z896. The part number of the Intel motherboard is 541286-005. (Gateway 2000 uses this motherboard.)

If you experience problems with user-level programs, turn off write-back CPU caching (or all caching if there is no control over the caching algorithm) using the BIOS setup facility.

- The Adaptec 2940 SCSI adapter does not recognize the Quantum Empire™ 1080S SCSI disk drive or the HP 3323 SE SCSI disk drive.
  Workaround: Reduce the Synchronous Transfer rate on the Adaptec controller to 8 Mbytes per second.

AMD PCscsi, PCscsi II, PCnet-SCSI PCI HBAs

Description

The Solaris `pcscsi` driver supports the AMD PCscsi (Am53C974), PCscsi II (Am53C974A), and PCnet-SCSI (Am79C974) host bus adapters. These are all PCI devices. The PCnet-SCSI chip is currently embedded in the HP Vectra XU 5/90 and Compaq DeskPro XL 560 systems.

Only the SCSI portion of the PCnet-SCSI host bus adapter is discussed here. The net portion of the AMD PCnet-SCSI chip requires a separate Solaris driver (`pcnet`) for operation. See the "AMD PCnet Ethernet (PCnet-ISA, PCnet-PCI)" Device Reference Page for specific configuration information about the Ethernet capabilities.

Device Configuration

Preparing for Configuration

- See the manufacturer's documentation for setup and cabling requirements.
- Ensure the SCSI bus is properly terminated.

Configuring the Device

Use the motherboard CMOS or EISA setup utility to ensure that the controller is enabled, that the SCSI BIOS is enabled and does not conflict with locations used by another device, and that the IRQ settings do not conflict with another device.

Known Problems and Limitations

- The SCSI Tagged Queuing option is not supported.
- Occasional kernel panics have been observed on PCN/PCSCSI drivers as found in the HP Vectra XU, Compaq XL560, and Compaq XL590 series of desktops, when using these drivers under simultaneous high network and SCSI loads. We do not recommend using these beta drivers in a production server environment.

Compaq SMART SCSI Array Controller

Description

The Compaq SMART SCSI Array controller supports internal and external SCSI drives on the Compaq family of ProSignia, ProLiant, and Systempro Servers. It is used on an EISA bus.

Device Configuration

Preparing for Configuration

Be sure to read the documentation that comes with your hardware. Note the following:

- The SMART controller only supports disk drives. SCSI tape drives and CD-ROM drives are not supported.
- The Boot device *must* be logical drive 0 on the *primary* controller. Even though the BIOS lets you configure any controller as your primary controller, it will only let you boot from logical drive 0 on that controller.

Configuring the Device

Run the EISA Configuration Utility (ECU) to configure your drives.

Known Problems and Limitations

If you want to change your RAID configuration, first delete the old configuration information using the ECU. If you physically move the disks prior to deleting the RAID configuration (or the partition information on the logical drives), you may not be able to boot your system.

DPT PM-2011/PM-2021 ISA HBAs

Description

The DPT PM-2011 and PM-2021 host bus adapters are 16-bit SCSI controllers for an ISA or EISA bus.

Device Configuration

Preparing for Configuration

- The EPROM revisions on the board need to be checked. The EPROM should be version 5E or later. The SmartROM should be version 2.C or later.
- The Solaris operating environment supports only two DPT adapters per system.
  - If two DPT PM-2011 or 2021 or 3021 adapters are installed, do not install an IDE controller.
  - If you have an IDE adapter installed, only one DPT adapter will be supported.

Avoiding Possible Device Conflicts

- Since the IDE adapters are configured in the same I/O address range, ensure there is no address conflict with any IDE controller.
- If you have an IDE adapter installed, IRQ 14 should not be used by the DPT adapter.

Configuring the Device

1. **Consult your Device Configuration Worksheet to see if the DPT PM-2011/PM-2021 SCSI HBA settings need to be changed.**
2. **See the DPT manual for a description of the board's jumper settings.**
3. **Follow the instructions in the "DPT PM-2022/PM-2122/PM-3222 EISA HBAs" Device Reference Page to disable WD1003 emulation using the DPT SCSI Storage Manager Utility diskette.**
   Emulation mode for both drives should be set to 0 for drives zero and one, indicating "no drives present."

Note – Failure to disable the emulation modes for drives 0 and 1 will result in missing drives during the system boot process.

Valid Configurations

The parameters for DPT PM-2011/PM-2021 host bus adapters are different for first and secondary adapters:

- First Adapter:
  - I/O Address 0x1F0
  - IRQ 15
  - DMA 5
- Second Adapter:
  - I/O Address 0x230
  - IRQ 14 or 12
  - DMA 6

If you have an IDE adapter installed, the valid parameters for the first (and only) DPT adapter are as follows:

- I/O Address 0x230
- IRQ 12
- DMA 6

Note – Be sure to use Edge-triggered interrupts on the PM-2011.

Known Problems and Limitations

(1199652) The DPT controller may cause the installation of the Solaris operating environment to fail due to loss of interrupts, depending on the setting of Jumper Y34.
Workaround: If the software installation fails, try changing the setting of Jumper Y34 (even if the onboard floppy has already been disabled by removing Jumper Y20). Toggling this setting appears to enable the controller to function correctly.

DPT PM-2012B EISA HBA

Description

The DPT PM-2012B host bus adapter is a SCSI controller for an EISA bus.

Device Configuration

Configuring the Device

1. **Consult your Device Configuration Worksheet to see if your DPT PM-2012B SCSI HBA settings have to be changed.**
2. **Follow the *DPT SmartCache Plus User's Manual* for a description of its configuration program.**
3. **Boot DOS from the diskette drive.**
4. **Insert a copy of the DPT Utility diskette in the diskette drive.**
   a. **Type `DPTFMT` and press Enter.**
   b. **Press Enter to begin.**
   c. **Press Enter to continue.**
   d. **Press <F3> to enter SCSI ID 0 and LUN 0.**
   e. **Press <F3> to continue.**
   f. **Use the down arrow to select MS-DOS and PC DOS.**
   g. **Press Enter to write out the drive geometry.**
   h. **Press Enter to reboot.**
5. **Insert the user copy diskette of the EISA configuration utility (CF.EXE) containing the !DPTxxx.CFG files.**
   a. **At the A:> prompt type `CFG` and press Enter.**
   b. **At the Viewer Edit Details screen press Enter.**

c. Press the down arrow to the DPT SCSI HBA to select parameters and set them as follows:

- Bus — Enabled
- IDE Boot Address — Primary
- IRQ — Entry noted on your worksheet
- Option ROM Address — Default
- SCSI ID HBA — Default 7
- WD1003 — Emulation off for both drive 0 and 1

d. Press F10 to save your changes.

6. **Insert a copy of the boot diskette.**
7. **Press Enter to reboot DOS.**

Valid Configurations

Following are the DPT PM-2012B SCSI HBA parameter ranges:

- IRQ — Any legal value between 9 and 15

Note – Make sure you use Edge-triggered interrupts.

- WD1003 — Emulation off
- Option ROM Address — Default
- I/O Address — *z*C88 (where *z* is a slot number from 1 to 7)

Warnings

- If you have used the DPTFMT utility correctly, and the board is properly seated in your machine, failure to display disk geometry may indicate a defective board.
- **(1183572)** In order to prevent system hangs caused by improper IDE emulation, the version number of the EISA `!DPTA401.CFG` file should be 6B3 or later. If it is not, obtain a newer version from your vendor and rerun the EISA configuration utility.

DPT PM-2022/PM-2122/PM-3222 EISA HBAs

Description

The DPT PM-2022, PM-2122, and PM-3222 host bus adapters are SCSI controllers for an EISA bus. The PM-3222 is a SCSI RAID adapter.

Device Configuration

Preparing for Configuration

Check the EPROM revisions on the board.

- The DPT PM-3222 adapter should have EPROM version 7A or later and SmartROM version 3.B or later.
- The DPT PM-2022 and PM-2122 adapters should have EPROM version 5E or later and SmartROM version 2.D1 or later.

Configuring the Device

1. **Consult your Device Configuration Worksheet to see if the DPT PM-2022/PM-2122/PM-3222 SCSI HBA settings need to be changed.**
2. **See the** *DPT SmartCache III User's Manual* **for a description of its EISA configuration program.**
3. **Boot DOS from the diskette drive.**
4. **Insert the user copy diskette of the EISA configuration utility (CF.EXE) containing the !DPTxxxCFG files.**
5. **Make sure the parameters are set as shown under "Valid Configurations."**
6. **Run the DPT SCSI Storage Manager Utility, DPTMGR, under DOS and select Solaris as the operating system.**
   See Chapter 4 of the *DPT SmartCache III User's Manual* for instructions.

Note – An error message similar to the following will be displayed while DPTMGR is running:

```
Unable to find any drivers in the DRIVERS Directory......
```

This message can be ignored.

Valid Configurations

The following are the DPT PM-2022, PM-2122, and PM-3222 SCSI HBA parameter ranges:

- WD1003 Boot Address — Disabled (Secondary)
- IRQ — Any legal value between 11 and 15, except 14

Note – Make sure you use Edge-triggered interrupts.

- IDE Boot Address — Disabled
- SCSI BIOS ROM Address — Default
- HBA SCSI ID — Default 7

Alternative Custom Configuration

When using the EISA configuration utility supplied by DPT in conjunction with a configuration file, you enter emulation information as part of the configuration process. When you configure two drives, both should be "disabled." When asked for drive types for drives zero and one, type 0. This indicates "no drives present" and disables the WD1003 emulation mode of the adapter, allowing correct operation of the native mode driver.

Warnings

(1183572) In order to prevent system hangs caused by improper IDE emulation, the version number of the EISA !DPTA410.CFG file should be 6E5 or later. If it is not, obtain a newer version from your vendor and rerun the EISA configuration utility.

(1167519) The Solaris software installation may initially fail when trying to setup the `fdisk` partition table on one or more disks. The failures have been observed on systems with a disk RAID configuration, where at least one disk is

new or has had its partition table zeroed out. The error messages displayed are:

```
ERROR: Could not create Fdisk partition table on disk
ERROR: Could not label the disks
```

Workaround: If the Solaris software installation fails with these error messages, restart the installation. It will most likely succeed.

DPT PM-2024/PM-2124/PM-3224 PCI HBAs

Description

The DPT PM-2024, PM-2124, and PM-3224 are SCSI controllers for a PCI bus. The PM-3224 is a SCSI RAID adapter.

Device Configuration

Preparing for Configuration

- Check the EPROM revisions on the board.
  - The DPT PM-3224 should have EPROM version 7A or later.
  - The DPT PM-2024 and PM-2124 adapters should have EPROM version 6D4 or later.
  - All the PCI boards should have SmartROM version 3.B or later.
- Ensure that the controller board is properly installed in any PCI slot capable of bus–mastering.

Configuring the Device

1. **Use the CMOS configuration utility supplied by the computer vendor to enable the DPT PCI controller.**
   a. **Enable the DPT PCI controller.**
   b. **Enable the PCI slot.**
   c. **Enable bus mastering.**
   d. **Choose an unused IRQ between 9 and 15.**

Note – If IRQ 12 does not respond, try another unused IRQ.

2. **Enter the DPT Configuration Utility by typing Ctrl-D at controller boot time.**
   a. **Set I/O address to "`Auto`."**
   b. **If the firmware version of the controller is less than 7A, or if your computer memory is ECC or does not check parity, disable PCI parity checking.**

Warnings

If the boot diskette reports a DPT controller driver cannot be installed, the motherboard installed in your system probably has ECC memory or does not check parity; disable PCI parity checking.

IBM DMC960 RAID Micro Channel HBAs (IBM SCSI-2 RAID, IBM SCSI-2 Fast/Wide Streaming-RAID Adapter/A)

Description

The IBM DMC960 RAID Micro Channel bus controllers include the IBM SCSI-2 RAID and the IBM SCSI-2 Fast/Wide Streaming-RAID Adapter/A.

Device Configuration

Preparing for Configuration

- The choice of SCSI target ID numbers is limited. Assuming the maximum number of targets per channel on the particular model IBM host bus adapter is MAX_TGT, the SCSI target IDs on a given channel should range from 0 to (MAX_TGT – 1). See the vendor documentation for more information.
- SCSI target IDs on one channel can be repeated on other channels.

  Example:
  The IBM DMC960 model supports a maximum of seven targets per channel, that is, MAX_TGT = 7. Therefore, the SCSI target IDs on a given channel should range from 0 to 6.

Configuring the Device

1. **Consult your Device Configuration Worksheet to see if the IBM DMC960 settings need to be changed.**
2. **Follow the configuration instructions in the vendor's manual.**

Known Problems and Limitations

- If a SCSI disk drive is not defined to be part of any physical pack within a system drive, it is automatically labeled as a *standby* drive. If any SCSI disk drive within a system drive fails, data on a standby drive *may be lost* due to the standby replacement procedure. This procedure will overwrite the standby drive if the failed disk drive is configured with any level of redundancy (RAID levels 1, 5, and 6) *and* its size is identical to the size of the available standby drive.

- Other than the “hot replacement” of disk drives, which is described in the manufacturer’s user’s guide, the IBM DMC960 series does not currently support “hot-plugging” (adding or removing devices while the system is running). To add or remove devices you must shut down the system, add or remove devices, reconfigure the host bus adapter using the configuration utility provided by the manufacturer, and then reboot your system.
- **(1210290)** Some tape drives may prematurely report "tape full" when writing to tape under heavy system load. This has been seen with the Archive Viper 150 tape drive, for example.
- **(1212018)** The command "`mt erase`" works but reports the following error message when it gets to the end of the tape:

```
/dev/rmt/0 erase failed: I/O error
```

IBM Micro Channel SCSI-2 Fast/Wide Adapter/A

Description

The IBM SCSI-2 Fast/Wide Adapter/A is a SCSI controller used with a Micro Channel bus.

Caution – The Solaris `mcis` driver, which supports the IBM Micro Channel SCSI adapter, conflicts with the IBM SCSI-2 Fast/Wide Adapter/A. To avoid conflicts, the Solaris `mcis` driver must be disabled before the IBM SCSI-2 Fast/Wide Adapter/A can be installed. This is done by modifying the (BETA) Driver Update Boot diskette using the `corvette.bat` file under DOS; see "Modifying the Solaris (BETA) Driver Update Boot Diskette" in Chapter 1 for instructions.
If you already have the Solaris operating environment running on your system and you want to add support for the IBM SCSI-2 Fast/Wide Adapter/A, you should *not* install the adapter until steps have been taken to disable the `mcis` driver; see "Disabling Drivers After Installing the (BETA) Driver Update" in Chapter 1 for instructions.

Device Configuration

Preparing for Configuration

Ensure that the controller board is properly installed in any slot between 1 and 7. Slots 8 and above are not supported in this release.

Avoiding Possible Device Conflicts

The IBM SCSI-2 Fast/Wide Adapter/A cannot be installed on a system with the IBM Micro Channel SCSI adapter.

Valid Configurations

- IRQ — 14
- I/O Address — 0x3540, 0x3548, 0x3550, 0x3558, 0x3560, 0x3568, 0x3570, 0x3578

Known Problems and Limitations

- The microcode version of the SCSI-2 Fast/Wide Adapter/A board should be 0x71 or later. Boards with older versions, such as version 0x58, may cause the Solaris system to hang when using certain tape drives. The Solaris `corvette` driver displays a warning message if it detects an older, unsupported version of the adapter.
- The IBM SCSI-2 Fast/Wide Adapter/A is currently only supported on systems with at least 32 Mbytes of memory installed.

Tricord Systems Intelligent SCSI Subsystem (ISS) HBA

Description

The Tricord Systems Intelligent SCSI Subsystem (ISS) controllers are multi-channel SCSI controllers supported only on the Tricord Systems Enterprise Server Models. The ISS family of controllers supports standard SCSI devices, such as disk, tape, and CD-ROM, as well as RAID groupings of SCSI disk drives.

Device Configuration

Preparing for Configuration

Version 4.03 or later of the system BIOS is required to be able to boot the Solaris operating environment.

Device Naming Convention

The special files that get created on an ISS system are described in the `iss(7)` manual page.

Known Problems and Limitations

Regardless of the number of devices on the ISS controller, a maximum of 8 disk devices (physical or logical) will be shown by the real mode driver when installing the Solaris operating environment. This also limits the number of drives that can be used to boot Solaris.

Part 2 — Network Adapters

AMD PCnet Ethernet (PCnet-ISA, PCnet-PCI)

Description

The Solaris `pcn` driver supports the PCnet family of Ethernet controllers based on the AMD PCnet-ISA and PCnet-PCI controller chips. These include PCnet controllers embedded on motherboards found in systems from Intergraph and Hewlett-Packard, and a variety of add-in NICs.

Device Configuration

Avoiding Possible Device Conflicts

- The Solaris `elink` driver may interfere with the proper operation of PCnet-ISA adapters. If you are installing over a network that uses a PCnet-ISA Ethernet and you experience problems with the network hanging, try excluding the `elink` driver before attempting to install again. This is done by modifying the boot diskette using the `pcnet.bat` file under DOS; see "Modifying the Solaris (BETA) Driver Update Boot Diskette" in Chapter 1 for instructions.
- If you already have Solaris installed on your system, and after installing this (BETA) Driver Update you experience network problems with your PCnet-ISA adapter, try disabling the Solaris `elink` driver. This is done by modifying a system file and rebooting; see "Disabling Drivers After Installing the (BETA) Driver Update" in Chapter 1 for instructions.
- If your system has a PCnet-ISA controller note the configuration of other add-in adapters because the PCnet-ISA controller uses I/O addresses common to many other ISA and EISA adapters. It is particularly important to verify the configuration when installing add-in adapters to a system whose motherboard embeds the AMD chip.

Configuring the Device

PCnet-ISA

Be sure that your PCnet-ISA adapter does not conflict with other adapters configured in the system. The valid parameter settings for PCnet-ISA are listed under "Valid Configurations."

PCnet-PCI

PCI devices are autoconfigured by the system BIOS. No configuration is necessary.

Valid Configurations

The following parameters are supported for PCnet-ISA adapters:

- IRQ 3, 5, 9, 10, 11
- I/O Address 0x300, 0x320, 0x340, 0x360

Known Problems and Limitations

- In some cases, IRQ 4 may be offered as a configuration option for the PCnet-ISA adapters; the Solaris `pcn` driver does not support IRQ 4.
- On some systems, particularly those with PCI controllers, IRQ 9 may not be usable by a PCnet-ISA adapter; configure the PCnet-ISA adapter to use another interrupt. PCnet-PCI adapters are not affected.
- Some versions of the PCnet-PCI chip have known problems which result in unreliable network operation. These chip problems can also cause the system to completely "freeze."
  Workaround: Unfortunately, there are no known software workarounds. If you encounter these symptoms while using an adapter based on a PCnet-PCI chip, contact the vendor of the adapter to determine if the adapter contains the version of the chip known to exhibit these problems.
- **(1192044)** PCnet doesn't serve `rpl` requests until `snoop` is started.
  Any adapter supported by the Solaris `pcn` driver will not function as a network installation server unless the `snoop` command is also run using that adapter. This will be fixed in a future (BETA) Driver Update.
- Occasional kernel panics have been observed on PCN/PCSCSI drivers as found in the HP Vectra XU, Compaq XL560, and Compaq XL590 series of desktops, when using these drivers under simultaneous high network and SCSI loads. We do not recommend using these beta drivers in a production server environment.

Intel EtherExpress PRO

Description

The Intel EtherExpress PRO is an Ethernet controller for the connectionless Data Link Provider Interface and is used with an ISA bus.

Device Configuration

Configuring the Device

1. **The Intel EtherExpress PRO can be configured to any I/O address that does not conflict with another device.**
2. **Choose one of the valid IRQ values listed below.**
3. **For all other settings, use the defaults.**

Valid Configurations

• IRQ	3, 5, 9, 10, 11 (10 is recommended)
• I/O Address	Any I/O address that does not conflict with another device; 0x300 is recommended

Compaq NetFlex-2 DualPort ENET, NetFlex-2 ENET-TR EISA Controllers

Description

The Compaq NetFlex-2 DualPort ENET controller provides two Ethernet interfaces under the Solaris operating environment. The Compaq NetFlex-2 ENET-TR controller can be configured for either Ethernet or Token Ring, but only the Ethernet functionality is supported under the Solaris operating environment.

Both the NetFlex-2 DualPort ENET and the NetFlex-2 ENET-TR are EISA bus controllers.

Device Configuration

Preparing for Configuration

Compaq NetFlex-2 DualPort ENET *only*: If the dual ported Ethernet card will be used to install Solaris over a network, the RJ-45 connector for the network must be connected to the *first* network port (Port 1). See the documentation that comes with the dual ported card to locate Port 1.

Avoiding Possible Device Conflicts

- Check for IRQ conflicts with ISA devices not defined in the EISA configuration software.
- The default IRQ is 10, which can be a usable IRQ for many ISA cards, including SMC Ethernet cards, for example.

Note – The Compaq NetFlex-2 DualPort ENET card shares the same IRQ for both ports.

Configuring the Device

Use the EISA configuration utility to tell the system about the card.

1. **Set the connector type.**

- For the NetFlex-2 DualPort ENET, use RJ-45.

- For the NetFlex-2 ENET-TR, use DB-15 or 10BaseT RJ-45.
  Note that the default setting (DB-9) on the NetFlex-2 ENET-TR needs to be changed.

2. **Compaq Netflex-2 ENET-TR card *only*: Configure the Netflex-2 ENET-TR card to use 10Mb/sec data rate.**
   Note that the default (16 Mb/sec) on the NetFlex-2 ENET-TR needs to be changed.

Valid Configurations

The following IRQs are valid for this card:

- IRQ 3, 5, 9, 10, 11

Known Problems and Limitations

Promiscuous mode is not supported by the current release of the firmware for this card.

Novell NE2000, NE2000plus Ethernet

Description

The Novell NE2000 and NE2000plus are ISA bus Ethernet controllers. The NE2000plus card is software configurable; the NE2000 card must be manually configured with dip switches and jumpers.

Caution – The NE2000/NE2000plus adapters are sensitive to autoprobing by other drivers, and require autoprobe reset sequences that may disturb other cards. To avoid conflicts, the NE2000/NE2000plus cards cannot be installed on a system with the Solaris drivers listed in Table A-1.
In addition, the Solaris `nei` driver is disabled by default, and steps must be taken to enable it. There is a script (`nov2000.bat`) on the (BETA) Driver Update Boot diskette that will disable the other drivers and enable the `nei` driver; see "Modifying the Solaris (BETA) Driver Update Boot Diskette" in Chapter 1 for instructions.
If you already have the Solaris operating environment running on your system and you want to add support for the NE2000 or NE2000plus adapter, you should *not* install the adapter until steps have been taken to disable other drivers; see "Enabling Support for the Novell NE2000/NE2000plus After Installing the (BETA) Driver Update" in Chapter 1.

Table A-1 Solaris Drivers and Hardware That Conflict With the NE2000/NE2000plus

Solaris Driver	Supported Hardware
`eepro`	Intel EtherExpress PRO
`el`	3Com EtherLink II (3C503), EtherLink II/16 (3C503-16)
`elink`	3Com EtherLink 16 (3C507)
`iee`	Intel EtherExpress 16, 16C, 16TP, MCA, MCA TP
`pcn`	AMD PCnet Ethernet (PCnet-ISA, PCnet-PCI)
`smc`	SMC EtherEZ, EtherCard Elite16 Ultra, EtherCard PLUS Elite16, EtherCard PLUS (8416, 8216, 8013, 8003)
`tiqmouse`	Texas Instruments TravelMate 4000E QuickPort Ball Point mouse

Device Configuration

Preparing for Configuration

The NE2000/NE2000plus Ethernet cards present special problems for configuration. Various early versions and some clones of these models may hang the system when probed. The large I/O space used by the card (0x20 bytes) also increases the chance of conflicts with other devices. To avoid these problems, read and follow the advice on the next few pages.

- The Solaris `nei` driver expects the NE2000/NE2000plus card to be in a 16-bit ISA slot. Ensure that the card is in a 16-bit slot and is jumpered for 16-bit operations.
- Some NE2000/NE2000plus clones allow you to configure the bus speed; the bus speed on the card should match that of the system.
- Certain I/O Base addresses (0x320, 0x340, and 0x360) are not supported under the Solaris operating environment. These are described in the next section.

Avoiding Possible Device Conflicts

- Due to the large I/O space (0x20 bytes) used by the NE2000/NE2000plus cards, the I/O Base addresses of 0x320, 0x340, and 0x360 are not supported by default because of conflicts with other drivers. This leaves only 0x300 for the NE2000, and 0x240, 0x280, 0x2C0, and 0x300 for the NE2000plus.
- Unfortunately, some NE2000 clones will not operate at all combinations of I/O Base address and IRQ settings, so configuration may be further restricted to the default values of IRQ 3 and I/O Base address 0x300. Be sure to read the configuration information in the manual provided by the manufacturer of the card.

Caution – *Never* use an IRQ or I/O Base address other than the ones listed under "Valid Configurations," even if they are supported by the NE2000/NE2000plus card. Due to conflicts with other Solaris drivers, for example, the I/O Base addresses of 0x320, 0x340 and 0x360 are specifically disallowed in the Solaris `nei.conf` file.

- **For NE2000plus cards *only*:** If the card has been configured to run in SHARED MEMORY mode, it will use 0x4000 bytes of shared memory in the range 0xD0000-0xDFFFF. Be sure to check that the BIOS setup allocates this

range of memory to the adapter and that other cards in the system do not conflict. If a conflict is unavoidable, configure the NE2000plus in I/O mode so that it will not use shared memory. (To configure the NE2000plus card, a vendor-supplied DOS program PLUSDIAG must be used.)

Configuring the Device

The NE2000 card is configured using dip switches. These must be set prior to installing the card. The NE2000plus card is configured using the vendor-supplied DOS program PLUSDIAG. To use it, the NE2000plus card must first be installed in your system.

1. **Set the IRQ to one of the interrupts listed under "Valid Configurations."**
2. **Set the I/O Base address to one of the values listed under "Valid Configurations."**
3. **Set the bus speed and bus width to match that of the system.**
4. **For NE2000plus cards *only*: The SHARED MEMORY address should be set starting from 0xD0000, increasing by 0x4000 for each additional card.**
5. **See "Known Problems and Limitations" for other potential problems.**

Valid Configurations

Note that some NE2000 clones may further restrict these choices.

NE2000:

- IRQ 2,3, 4, 5
- I/O Base Address 0x300

NE2000plus:

- IRQ 2, 3, 4, 5, 10, 11, 12, 15
- I/O Base Address 0x300, 0x240, 0x280, 0x2C0
- SHARED MEMORY 0xD0000-0xDC000

Known Problems and Limitations

- If data corruption errors occur while an NE2000/NE2000plus card is installed, check the bus speed that is set on the card. (This is a configurable option on some clone cards.) Some cards may not run reliably at 16 MHz, and must be configured to run at 8 MHz.

- Some NE2000/NE2000plus clones may misidentify slot width, or may not work with all mode or jumper settings. For example, some NE2000plus clones may only work in both data modes (I/O and shared memory), depending on the system configuration.
  Workaround: Try a different bus slot, if the card misdetects a 16-bit slot for an 8-bit slot. For NE2000plus clones, try both data modes by either setting the jumpers or using the DOS configuration program.
- If the NE2000 card is not recognized by the Solaris operating environment, it's possible the clone does not sufficiently resemble the NE2000 hardware; improper configuration setup may also cause this failure.
- If the system is hanging or the NE2000 card is not recognized by the Solaris software, it may be necessary to reset the bus speed or I/O recovery time (which may be settable in the system BIOS). General bus noise may also affect the behavior of certain NE2000 clones; try swapping devices into different slots until the card begins to function satisfactorily.
- If the system hangs after booting with a NE2000/NE2000plus card installed and removing the card causes the system to no longer hang, check the following:
  - The Solaris software has not been properly configured to support the NE2000/NE2000plus Ethernet driver. See the Caution at the beginning of this Device Reference Page.
  - The NE2000/NE2000plus card has not been jumpered for 16-bit operation, or has not been placed in a 16-bit slot. Some cards misdetect slot type. See "Preparing for Configuration."
  - The NE2000/NE2000plus clone is too poorly implemented to be recognizable. Replace the card.
  - The NE2000/NE2000plus card has not been configured properly. See "Avoiding Possible Device Conflicts" and "Configuring the Device."

Novell NE3200 EISA Ethernet

Description

Novell NE3200 EISA Ethernet controller.

Device Configuration

Preparing for Configuration

- The Novell NE3200 Ethernet card must be installed in an EISA slot.
- The media type must be decided before the device is configured. For example, the media type may be BNC (thin wire) or DIX (thick wire).

Avoiding Possible Device Conflicts

Proper EISA device configuration ensures no conflicts with other devices.

Configuring the Device

1. **Use the EISA configuration utility on your system to configure the controller.**
2. **Set the media type to either BNC or DIX.**
3. **Set the interrupt type to LEVEL TRIGGERED.**
4. **Choose an IRQ that is not taken by another device.**
   Note that IRQs for ISA devices are not usually displayed in the EISA configuration utility.

Valid Configurations

All of the EISA configurable parameters are also valid under the Solaris operating environment. As with any device, be wary of interrupt sharing.

Known Problems and Limitations

- If error messages such as “no such device” are displayed when attempting to access the Ethernet card, the device is probably not configured in the EISA configuration.

- Some NE3200 clones do not work with level-triggered interrupts.
  If you install an NE3200 card and your system hangs while trying to configure devices after reboot, it may not work with level-triggered interrupts.
  Workaround: Use the EISA configuration utility to select an interrupt type of EDGE TRIGGERED instead of LEVEL TRIGGERED.

Racal InterLan ES3210/ES3210 TP EISA Ethernet

Description

The Racal InterLan ES3210 is a 32-bit Ethernet adapter compatible with an EISA-bus. The card comes in two versions:

- ES3210 supports standard Ethernet (10Base5) and thin Ethernet (10Base2).
- ES3210 TP supports standard Ethernet (10Base5) and unshielded twisted-pair (10BaseT).

The ES3210 cards are based on the National 8390 network interface controller.

Note – Only the latest revision of the ES3210 is supported—it uses surface-mount technology; the earlier revision does not. The older boards have a white sticker on the back bearing the number 625-0136-00; the newer cards have the number 625-0367-00 or higher.

Device Configuration

Preparing for Configuration

- The Solaris driver for the ES3210/ES3210 TP does not support I/O-mapped I/O. Since this is the default setting for each card ("Shared memory disabled"), it must be changed. An explicit address for the memory area on the board must be configured as described under "Configuring the Device."
- The driver currently does not use DMA channels 0-3 since 32-bit burst mode DMA transfers cannot be accomplished on these channels. The driver forcibly uses memory-mapped I/O even when one of these DMA channels is configured.

Avoiding Possible Device Conflicts

- Check the IRQ levels used by devices on your system. The default setting for the IRQ on this Ethernet adapter is 3, which is typically used by COM2. IRQ 6 is typically used by the diskette controller.
- The choices for shared memory on the Racal InterLan ES3210 are C0000, C4000, C8000, CC000, D0000, D4000, D8000, and DC000; however, note that C0000-C3FFF is used by the VGA BIOS, if present.

Configuring the Device

Use the EISA configuration utility for your system to make the following settings for the ES3210 card:

1. **Select the interrupt (IRQ) the card will use.**
   This is done at the "Interrupt Level Select" prompt. Be sure to check this.

2. **Set the base address of the ES3210 memory to any available (unused) location.**
   This is done at the "Memory Base Address Selection" prompt.

Note – The default setting is "Memory Mapped Disable." The Solaris driver will not work with this setting; you must change it.

   Be sure that the address you choose is not being used by some other adapter, particularly an ISA adapter. Note that the EISA configuration utility cannot accurately detect conflicts with ISA cards; it relies on information you enter about these devices to determine if conflicts exist.

3. **Choose a DMA channel.**
   This is done at the "DMA Channel Select" prompt. If you choose DMA channel 0, 1, 2, or 3, DMA will *not* be used.

Valid Configurations

The following parameters are valid for the Racal InterLan ES3210:

- IRQ — 3, 4, 5, 6, 7, 9, 10, 11, 12, 14, 15
- Memory Base Address — 0xC0000, 0xC4000, 0xC8000, 0xCC000, 0xD0000, 0xD4000, 0xD8000, 0xDC000
- DMA Channel — Disable, 0, 1, 2, 3, 5, 6, 7

Known Problems and Limitations

(1188007) The current release of the Solaris `riles` driver causes the network performance to degrade considerably when the Ethernet adapter is configured to use a DMA channel of 5, 6, or 7. Even though these values are valid, it is best not to use them.