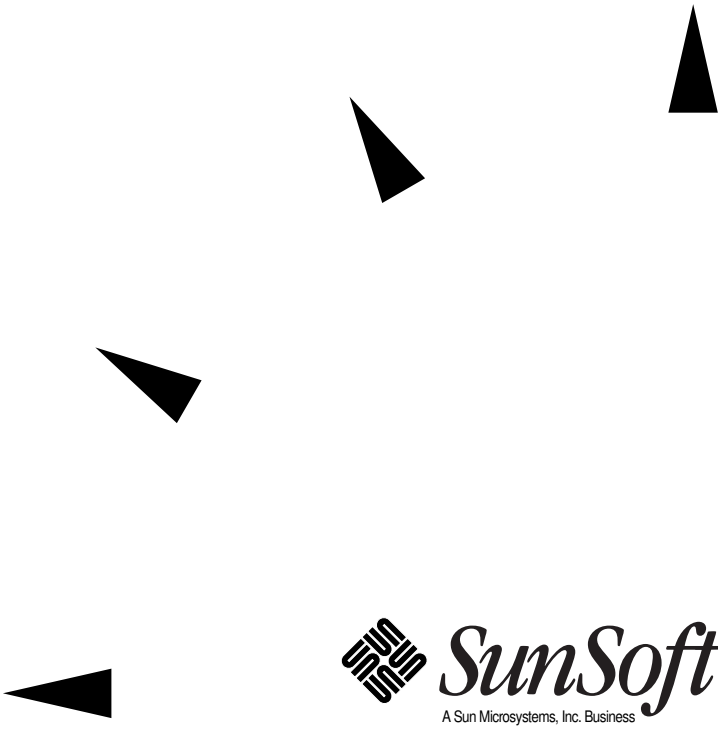
Solaris™ 2.5 x86 Beta Update Driver Update 3 Guide



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About This Book

This document provides information about x86 hardware devices that are now available for the Solaris™ 2.5 Beta Update release. If you have Solaris 2.5 Beta, you must reinstall with or upgrade to the Solaris 2.5 Beta Update release in order to use Beta Driver Update 3. Similarily, if you have the Solaris 2.5 Developers Conference release, you must also reinstall with the Solaris 2.5 Beta Update release before using Beta Driver Update 3.

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 *x86 Device Configuration Guide*, which you received with your Solaris 2.5 x86 Beta Update. This document assumes you have fully read and understood that guide; this document is an addendum to that guide. Likewise, the installation instructions for this Beta Update 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 Update 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 x86 Beta Update Driver Update 3," provides information about what is new in this release and how to install it.

Chapter 2, "Solaris 2.5 x86 Beta Udate Driver Update 3 Video," provides information about the contents, installation instructions, and known problems for the video support in this Beta Update Driver Update.

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

Related Books

You may need to refer to the following books when installing the Beta Update Driver Update:

- *x86 Device Configuration Guide* (for the Beta Update Release)
  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* (for the Beta Update Release)
  Describes late-breaking news about running Solaris 2.5 x86 Beta Update software, including known problems with supported hardware or device drivers.
- *Solaris 2.5 x86 Hardware Compatibility List* (for the Beta Update Release)
  Contains a list of supported hardware on Solaris 2.5 x86 Beta Update systems.

Solaris 2.5 x86 Beta Update Driver Update 3 1

Beta Driver Update 3 provides additional driver support for the Solaris 2.5 Beta Update release. It must be used with that release.

Note – If you have Solaris 2.5 Beta, you must reinstall with or upgrade to the Solaris 2.5 Beta Update release in order to use Beta Driver Update 3. If you have the Solaris 2.5 Developers Conference release, you must reinstall with the Solaris 2.5 Beta Update release before using Beta Driver Update 3.

What's New?

New Device Driver Support

Table 1-1 lists the new and updated device drivers in Solaris 2.5 x86 Beta Update Driver Update 3 that contain new functionality not included in the Solaris Beta Update release.

Table 1-1 New and Updated Drivers in This Beta Update Driver Update

SCSI HBA Drivers	
`blogic`	Updated to provide support for native mode PCI
Diskette Driver	
`fd`	New support for medium density format on 3.5-inch high-density diskettes used by NEC-DOS

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

Keyboard Driver	
`kd`	Updated to prevent the screen from going into non-readable white-on-white mode
Network Drivers	
`dnet`	New DEC 21040/21140 Ethernet (D-Link DE-530CT, SMC EtherPower 8432BT, SMC EtherPower 8432BTA, ZX312, Cogent EM960TP, Cogent EM100)
`ieef`	New support for Intel EtherExpress PRO/100 (82556)
`smceu`	New support for SMC Elite32 Ultra (8232)
`smcf`	New support for SMC Ether100 (9232)

Note – The updated `kd` driver ensures that the screen display does not go into a non-readable white-on-white mode during installation on some notebooks and other machines. Although the `kd` driver supports video cards, it resides on the boot diskettes rather than on the video distribution diskette.

Note – SMC EtherPower (8432BT/8432BTA), Cogent EM960TP/EM960C (TP connector only), Cogent EM100, D-Link DE-530CT, and Znyx EtherAction ZX312 boards have been successfully tested with a generic driver for network adapters based on the DECchip 21040 Ethernet and DECchip 21140 Fast Ethernet controllers. Other adapters may work with this driver and additional boards will be tested in the future.

However, some boards have failed to work with the `dnet` driver (for example quad-port boards from Cogent and Znyx), and other boards have exhibited inconsistent behavior (SMC EtherPower 10/100). Support for these and other DECchip-based adapters will be included in future releases of this driver.

Corrections to Known Problems

For a list of the known problems that are fixed in this Beta Update 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 Update Driver Update: `102503-03`, `102505-03`, and `102506-03`.

New "Medium" Density Diskette Support

Solaris x86 now supports "medium" density, the 1.2-Mbyte, 77-cylinder, 1024-byte sector format on 3.5-inch high-density diskettes, used by NEC-DOS. This feature has two hardware requirements. First, the diskette drive must be one of the supported, dual-speed, high-density drives. The currently supported diskette drives are: Teac FD-235HG, Teac FD-505, and Sony MPF420-6 (requires special cable to PC/AT diskette interface because the drive is hardwired to DriveSelect0).

Second, the diskette controller must be one of the supported enhanced controllers that provide a programmable DENSEL output. The currently supported diskette controllers (or multi I/O chips) are: SMC FDC37C665GT and SMC FDC37C666GT; National Semiconductor PC87303VUL, PC87322VF, and PC87332VLJ (other National Semiconductor chips that use the PC8477 core: PC87306, PC87311, PC87312, PC87323, and PC87334).

This feature is enabled by editing the `fd.conf` file and assigning a non-zero value to the `mode_3D` property for the appropriate drive entry.

New Video Support

Table 1-2 contains a list of the new video display adapters supported in Solaris 2.5 x86 Beta Update Driver Update 3.

Support for Notebook Monitor Types

This Video Beta Update Driver Update adds support for LCD monochrome, LCD, VGA, and LCD Super VGA notebook monitor types.

Table 1-2 New Video Display Adapters Supported in This Beta Update Driver Update

Vendor	Model	Bus	Chipset	Resolution and Color Depth									
				800x600		1024x768		1152x900		1280x1024		1600x1200	
				8	24	8	24	8	24	8	24	8	24
Hewlett-Packard	HP Vectra XU[1]	—	S3 Vision 864	✓	✓	✓		✓		✓			
SPEA	V7-Mirage P-64	PCI	S3 868	✓	✓	✓		✓		✓			
Toshiba	J3100	—	Western Digital 90C31A	✓		✓							

1. Both the ST 1702 and the ATT21C49 8 RAMDAC are supported.

"— "Indicates onboard video controller.

Modified Beta Update Driver Update Video Distribution and Installation Instructions

The Beta Update Driver Update Video distribution is 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 Update 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. See Chapter 2, "Solaris 2.5 x86 Beta Udate Driver Update 3 Video," for the new instructions.

Beta Update Driver Update Contents

Solaris 2.5 x86 Beta Update Driver Update 3 contains four diskettes labeled:

- "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Update Release, 1 of 2"
- "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Update Release, 2 of 2"
- "Driver Update 3 Distribution for Solaris 2.5 x86 Beta Update Release"
- "Driver Update 3 Distribution (Video) for Solaris 2.5 x86 Beta Update Release"

The Boot and Distribution diskettes are intended to be used with the Solaris 2.5 x86 Beta Update release. The "Driver Update 3 Distribution (Video) for Solaris 2.5 x86 Beta Update Release" diskette can only be used on systems that already have Solaris 2.5 x86 Beta Update installed. The contents of these diskettes are discussed in Chapter 2, "Solaris 2.5 x86 Beta Udate Driver Update 3 Video."

Beta Update Driver Update Boot Diskettes

Note – There are now two boot diskettes. The Solaris 2.5 x86 Beta Update Driver Update can be installed on x86 systems with two boot diskettes labeled "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Update Release 1 of 2" and "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Update Release 2 of 2."

The Multiple Device Boot (MDB) diskettes contain 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, the Beta Update Driver Update Distribution diskette will be read.

Beta Update Driver Update Distribution Diskette

The Beta Update Driver Update *Distribution* diskette labeled "Driver Update 3 Distribution for Solaris 2.5 x86 Beta Update Release" is read when the Beta Update Driver Update Boot diskettes are used to install Solaris. Alternatively, the Beta Update Driver Update Distribution diskette can be used without the boot diskettes to add new drivers to an existing x86 system running the Solaris 2.5 x86 Beta Update release.

The Beta Update Driver Update Distribution diskette contains the drivers listed in Table 1-1. 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.

For a complete list of the known problems that are fixed in this Beta Update 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 x86 Beta Update Driver Update 3: `102503-03`, `102505-03`, and `102506-03`.

Beta Update Driver Update Distribution (Video) Diskette

See Chapter 2, "Solaris 2.5 x86 Beta Udate Driver Update 3 Video," for a complete list of the video display adapters supported in this release.

Solaris 2.5 x86 Beta Update Driver Update 3 Release Notes

Choosing the Hard Drive Your System Will Boot From After Installation

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 Update 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.

- If you use a PCI system with a PCI IDE controller, you may have a problem booting Solaris if you have other PCI cards on the system attempting to share IRQ 14 or IRQ 15.
  Workaround: Use your BIOS to make sure that other PCI cards on your system are not using IRQ 14 or 15.

Modifying the Solaris Beta Update Driver Update Boot Diskettes

Before you install the Solaris 2.5 Beta Update Driver Update 3 release on your system, it may be necessary to modify the Beta Update Driver Update Boot diskettes to remove or enable certain drivers that conflict with each other. See the Device Reference Pages in the *x86 Device Configuration Guide* you received with your Solaris 2.5 Beta Update software if you have the following devices:

- 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 Update Driver Update Boot diskette before attempting to install again.

There are scripts on the Beta Update Driver Update Boot diskettes 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 "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Update Release, 1 of 2" into drive A:, make a copy of it, and remove the diskette:**
   `diskcopy a: a:`

4. **Insert a blank 3.5–inch diskette into drive A: and format it:**
   `format a:`

5. **Insert the "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Update Release, 2 of 2" into drive A:, make a copy of it, and remove the diskette:**
   `diskcopy a: a:`

6. **Store your original Boot diskettes in a safe place.**

7. **Label the copy of the Boot diskette as "Modified."**
   For example: "Modified Driver Update 3 Boot for Solaris 2.5 x86 Beta Update for Intergraph Systems, 1 of 2," or "Modified Driver Update 3 Boot for Solaris 2.5 x86 Beta Update for Intergraph Systems, 2 of 2."

8. **Insert the copy of the "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Release, 2 of 2" into drive A:.**

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

10. **Run the batch command file.**
    It may ask you to insert "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Update Release, 1 of 2" by prompting `Please switch to boot diskette #1`.

    - 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 diskettes are prepared to install the Solaris software on your system. If you have not already done so, configure your hardware as described in "Appendix B" in the *x86 Device Configuration Guide* you received with your Solaris 2.5 Beta Update software.

MP Support

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

Installing Solaris Using the Beta Update Driver Update Diskettes

To install the Solaris 2.5 x86 Beta Update Driver Update release, follow the instructions in *x86: Installing Solaris Software* using the diskettes labeled "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Update Release, 1 of 2" and "Driver Update 3 Boot Diskette for Solaris 2.5 x86 Beta Update Release, 2 of 2."

The procedure for installing Solaris using the Beta Update Driver Update Boot diskettes 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 diskettes, but the sequence of interaction with the user remains the same.

This Beta Driver Update has two boot diskettes. Be sure to insert them in the correct order. Insert the second diskette when prompted and leave it in the diskette drive until your system starts installing. 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 Update 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 Update 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 x86 Beta Udate Driver Update 3 Video," for instructions.

Adding New Drivers After the Solaris 2.5 x86 Beta Update Is Installed

If you already have the Solaris 2.5 x86 Beta Update software installed, the simplest way to add one of the new drivers to your system is to obtain the Beta Update Driver Update *Distribution* diskette and install it as a patch on your Solaris 2.5 x86 Beta Update 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 Update Driver Update *Distribution* diskette into drive 0.**
2. **Become root.**

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*.

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`.

```
# 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" below.**

When the system comes up, the new device drivers should be completely installed and functional. Certain devices require additional configuration.

- If you have an NE2000 or NE2000plus Ethernet adapter, an IBM SCSI-2 Fast/Wide Adapter/A, or a PCnet-ISA adapter, see the Device Reference Pages in the *x86 Device Configuration Guide* you received with your Solaris 2.5 Beta Update software.
- If you are replacing a network card with a newly supported network card, see "Replacing a Network Card."
- To install the new video display support, see Chapter 2, "Solaris 2.5 x86 Beta Update Driver Update 3 Video," for instructions.

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
```

Solaris 2.5 x86 Beta Update Driver Update 3 Video

2

A brief description of the contents of the video support included in Solaris 2.5 x86 Beta Update Driver Update 3 is followed by installation instructions and known problems. Read through the entire chapter once before installing the Beta Update Driver Update 3 Video.

Beta Update Driver Update Video Contents

The Solaris 2.5 x86 Beta Update Driver Update 3 Video release contains a diskette labeled: "Beta Driver Update 3 Distribution (Video) for Solaris 2.5 x86 Beta Update Release." The Video Distribution diskette is intended to be used on Solaris 2.5 x86 Beta Update systems only. Table 2-1 contains a list of video display adapters supported in this Beta Update Driver Update release.

Table 2-1 New Video Display Adapters Supported in This Beta Update Driver Update Release

				Resolution and Color Depth									
				800x600		1024x768		1152x900		1280x1024		1600x1200	
Vendor	**Model**	**Bus**	**Chipset**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**
Hewlett-Packard	HP Vectra XU[1]	—	S3 Vision 864	✓	✓	✓		✓		✓			
SPEA	V7-Mirage P-64	PCI	S3 868	✓	✓	✓		✓		✓			
Toshiba	J3100	—	Western Digital 90C31A	✓		✓							

1. Both the ST 1702 and the ATT21C49 8 RAMDAC are supported.

"— " Indicates onboard video controller.

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.

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" later in this chapter.

Beta Update Driver Update Video Release Notes

- The updated `kd` driver ensures that the screen display does not go into an unreadable white-on-white mode during installation on some notebooks and other machines. Although the `kd` driver supports video cards, it resides on the boot diskettes rather than on the video distribution diskette.
- Support for LCD monochrome, LCD VGA, and LCD Super VGA notebook monitor types have been added.
- This Beta Update Driver Update Video release also adds support for monitors with an 85 kHz refresh rate; previously 80 kHz was the maximum refresh rate supported.
- This Beta Update Driver Update Video release 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 512-Kbyte 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—38 kHz monitor type when configuring the window system.

- This Beta Update Driver Update Video release also includes software fixes to some known problems. See the `README` file in the directory `/var/sadm/patch/102535-03` 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 4 Mbytes of memory will not run OpenWindows multiple times at resolution of 1600x1200 for 8-bit depth and 85-kHz 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 8 Mbytes of memory does not display properly for the 85-kHz 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.
  W*orkaround*: 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.

2

Installing Beta Update Driver Update Video

The contents of the Beta Update Driver Update Video diskette is installed as patches on your Solaris 2.5 x86 Beta Update system. To do this, you must already have Solaris 2.5 x86 Beta Update Driver Update 3 installed and running on your x86 system.

Note – When installing the Solaris 2.5 x86 Beta Update Driver Update 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 Update Driver Update Video 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 – Beta Update Driver Update Video is now released as a compressed `cpio` image file. Consequently, if you are installing from diskette, there are a few extra steps that need to be taken to retrieve the files. If you have obtained the Beta Update Driver Update Video image file from on-line sources and you are not installing Beta Update Driver Update Video from diskette, you can proceed directly to step 5.

---

2. **Insert the "Driver Update 3 Distribution (Video) for Solaris 2.5 x86 Beta Update Release" diskette into drive 0.**

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 Beta Update Driver Update Video diskette, 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 Update Driver Update Video number.

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

6. **Configure the window system.**
   After the Beta Update 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.

7. **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.

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

9. **Clean up the temporary workspace.**

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

Installation of Beta Update 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* (Beta Update Release). 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**	
BusLogic SCSI HBAs	`blogic`	*page 23*
Network Adapters	**Solaris Driver**	
DEC 21040/21140 Ethernet (D-Link DE-530CT, SMC EtherPower 8432BT, SMC EtherPower 8432BTA, Znyx312, Cogent EM960TP, Cogent EM100)	`dnet`	*page 30*
Intel EtherExpress PRO/100 (82556)	`ieef`	*page 32*
SMC Elite32 Ultra (8232)	`smceu`	*page 34*
SMC Ether100 (9232)	`smcf`	*page 36*

Part 1 — SCSI Host Bus Adapters

BusLogic SCSI HBAs

Description

The BusLogic SCSI host bus adapters are controllers for common disk, tape, and I/O subsystems.

The following models are supported:

Model	Bus
BT-742A, BT-746C, BT-747C, BT-747S, BT-757C, BT-757S	EISA
BT-542B, BT-545C, BT-545S	ISA
BT-440C, BT-445C, BT-445S	VESA
BT-946C, BT-956C	PCI

Device Configuration

Preparing for Configuration

- **For EISA, ISA, and VESA Local Bus models:** Set the I/O address to any valid BusLogic host bus adapter I/O address except 0x330 and 0x230. (The factory default is 0x330, so it must be changed.)
- **For PCI models:**
  - If your PCI card is model BT-946C *and* it is labeled Rev. A or B, it needs to be supported in ISA emulation mode; use I/O address 0x334.

Note – In order to determine the revision level of a BusLogic PCI card, you must look at the card itself. The revision of the card is not referenced in the documentation that comes with the card.

  - If your PCI card is model BT-946C *and* it is labeled Rev. C, it can be supported in native PCI mode. To do this, select "Advanced option," and choose "NO" for the "Host Adapter I/O Port Address as default" option.

- If your PCI card is model BT-956C, or model BT-946C, Rev. E or later, it can also be supported in native PCI mode. To do this, disable the "Set ISA Compatible I/O Port (PCI Only)" option.

- If your BusLogic board model ends in "C", you must enter the AutoSCSI configuration utility and check the termination.

Configuring the Device

For EISA Models:

1. **Run the EISA configuration utility and change the factory-set I/O port address.**
   Do *not* use the default 0x330 I/O address.

2. **If a board has a model name ending with a "C", such as the BT-746C and the BT-747C, run the BusLogic AutoSCSI configuration utility.**
   To run the AutoSCSI utility, type Ctrl-B after you see the `BusLogic Utility Banner` on your screen.

   a. **Check termination.**

   b. **The Advanced option "`BIOS Support for > 2 Drives (DOS 5.0 or above)`" should be set to No.**

3. *For model BT-757C only:* **If the system has a narrow target, turn off the "wide negotiation option" when configuring devices.**

For ISA and VESA Local Bus Models:

1. **Set the I/O address and BIOS address with the dip switches.**
   Do *not* set the I/O address to 0x330.

2. **If a board has a model name ending with a "C", such as the BT-545C and the BT-445C, run the BusLogic AutoSCSI configuration utility to set the IRQ and check termination.**
   To run the AutoSCSI utility, type Ctrl-B after you see the `BusLogic Utility Banner` on your screen.

   a. **Set the IRQ.**

   b. **Check termination.**

   c. **The Advanced option "`BIOS Support for > 2 Drives (DOS 5.0 or above)`" should be set to No.**

3. **Older ISA and VESA Local Bus models of BusLogic boards, such as the BT-545S, BT-542B, and BT-445S, must have their IRQ set in two places—with switches and jumpers.**
   The Host Interrupt Request switch and the Host Interrupt Channel jumper must have settings that match, or the board will not work.

For PCI Model BT-946C, Rev. A and B only:

1. **The BusLogic BT-946C (Rev. A or B) board should be put into the Bus Master slot.**
2. **Enter the AutoSCSI utility.**
3. **Select "Advanced option."**
4. **Set termination as needed.**
5. **If the boot disk is larger than 1 Gbyte, set the "`Adapter BIOS Supports Space > 1 GB (DOS) only`" option to Yes.**
6. **Set the adapter to ISA-compatible mode.**
   Set the value for "`Set Host Bus Adapter IO Port Address as Default`" to No.
7. **The Advanced option "`BIOS Support for > 2 Drives (DOS 5.0 or above)`" should be set to No.**
8. **Save the changes.**
9. **Reboot the system.**
10. **If your PCI motherboard is not fully PCI-specification compliant, you may have to manually configure the IRQ and BIOS address values. If the system hangs while installing the Solaris operating environment, do the following:**
    - Check the IRQ jumpers on the motherboard, if any.
    - Run the CMOS utility to set IRQ and BIOS address, if any.
    - Run the BusLogic AutoSCSI utility.

    All the settings should match each other. On the BT-946C revision A or B adapter, the jumpers JP4 and JP5 are for configuring the BIOS address. If you need to manually configure the BIOS address, you may have to check these jumpers.

11. **If you still experience problems while installing the Solaris software, set the Interrupt Pin number of the "configure Adapter" option in the BusLogic AutoSCSI utility as follows:**

Slot	Interrupt Pin
0	A
1	B
2	C

For more information, see the "Configuration for Non-Conforming PCI Motherboards" and the "Handling Motherboard Variations" sections of the documentation that comes with your PCI BusLogic board.

For All Other PCI Models (Except BT-946C, Rev. A and B):

1. **The BusLogic PCI board should be put into the Bus Master slot.**
2. **Enter the AutoSCSI utility.**
3. **Set SCSI termination as needed.**
4. **Select "Advanced option."**
5. **If the boot disk is larger than 1 Gigabyte, set the** `Adapter BIOS supports space > 1 GB (DOS only)` **" option to Yes.**
6. **Choose the defaults except set the 5.1 "BIOS Support for > 2 Drives (DOS 5.0 or above)" to NO.**
7. **Save the changes.**
8. **Reboot the system.**
9. **If you experience problems while installing the Solaris software, set the Interrupt Pin number of the "configure Adapter" option in the BusLogic AutoSCSI utility as follows:**

Slot	Interrupt Pin
0	A
1	B
2	C

For more information, see the “Configuration for Non-Conforming PCI Motherboards” and the “Handling Motherboard Variations” sections of the documentation that comes with your PCI BusLogic board.

Valid Configurations

- ISA, EISA, and VLB adapters:
  - IRQ 9, 10, 11, 12, 14, 15
  - I/O Address 0x334, 0x230, 0x234, 0x130, 0x134
- PCI adapters:
  - IRQ 5, 6, 7, 8, 9, 10, 11, 12, 14, 15
  - I/O Address (Rev. A and B *only*) 0x334, 0x230, 0x234, 0x130, 0x134

Note – I/O addresses are dynamically configured for PCI adapters, Rev. C or later.

Multiple Controller Configuration

If you have multiple BusLogic boards in the system, follow these general rules to configure multiple BusLogic controllers:

- If one of the installed boards is a “C” model, it must be the primary controller.
- If one of the installed boards is a PCI bus model, it must be the primary controller.
- The primary controller must have an I/O address that precedes the secondary controller in the above list of Valid Configurations (as listed from left to right). For example, the primary controller may use an I/O address of 0x234, as long as the secondary controller uses either 0x130 or 0x134.
- The BIOS must be disabled on the secondary controller.
- Wide mode EISA and PCI adapters will support targets greater than 7 if the proper entries are added to the system configuration files, `/kernel/drv/cmdk.conf` (for disk), and `/kernel/drv/cmtp.conf` or `/kernel/drv/st.conf` (for tape).

Known Problems and Limitations

- Using an I/O address of 0x330 will cause the Solaris `aha` driver to be selected instead of the `blogic` native mode driver. These cards have not been tested in Adaptec AHA-1540 mode.
- This release of the `blogic` driver fixes bug 1188122: `blogic_chkerr panic while running stress test`. This bug caused a panic when running heavy I/O in the presence of intermittent tape accesses.
- Request updated firmware for the BT-946C (Rev. C) from BusLogic, and install Rev. E or later.
- Do not run the `drvconfig` utility during heavy I/O involving disks and tapes with BusLogic PCI cards since it can cause data overrun errors on disks or tape. This is documented in bug 1217378: `blogic data_ovr errors while stress testing (+drvconfig) on BT946C-Rev. E.`
- BusLogic EISA/PCI cards may cause data overrun errors under high stress when your system is configured with multiple disks. This is documented in bug 1218624: `blogic data_ovr errors while stress testing BT-747C Rev.A`.

Part 2 — Network Adapters

DEC 21040/21140 Ethernet (D-Link DE-530CT, SMC EtherPower 8432BT, SMC EtherPower 8432BTA, Znyx312, Cogent EM960TP, Cogent EM100)

Description

The Solaris `dnet` driver supports a large family of Ethernet controllers based on the DEC 21040 and 21140 controller chips.

Device Configuration

Avoiding Possible Device Conflicts

The following paragraphs describe how to set properties in the `dnet.conf` file. In each case, just add a line with the property you want to change, ending with a semicolon. For example, if you want BNC, add the following line to the `dnet.conf` file:

```
bncaui=1;
```

If you want to change more than one property, put all properties on one line separated by spaces with one semicolon at the end.

- The Solaris `dnet` driver is configured for optimal performance on today's 10-Mb networks, running in half-duplex mode. When used with a modern 100-Mb hub, running the driver in full-duplex mode will increase performance. To configure a controller to run in full-duplex mode, set the `fulldup=1` property in the `dnet.conf` driver configuration file.
- This driver does not support autoconfiguration of the network media. The RJ-45 connector is used by default. If you use another network media (BNC/AUI), you will not be able to install from the network. After installation you can force configuration of the BNC/AUI connector. Set the `bncaui=1` property in the `dnet.conf` driver configuration file.

- Future versions of controllers based on the DEC 21140 will offer a choice between 100-Mb and 10-Mb operation. By default, the dnet driver will operate the controller at 100-Mb. To force 10-Mb operation on one of these controllers, set the `mode=10` property in the `dnet.conf` driver configuration file.
- SMC EtherPower (8432BT/8432BTA), Cogent EM960TP/EM960C (TP connector only), Cogent EM100, D-Link DE-530CT, and Znyx EtherAction ZX312 boards have been successfully tested with the `dnet` driver for network adapters based on the DECchip 21040 Ethernet and DECchip 21140 Fast Ethernet controllers. Other adapters may work with the `dnet` driver, and additional boards will be tested in the future. However, some boards have failed to work with this driver (for example quad-port boards from Cogent and Znyx), and other boards have exhibited inconsistent behavior (SMC EtherPower 10/100). Support for these and other DECchip-based adapters will be included in future releases of this driver.

Valid Configurations

The PCI configuration process varies from system to system. Follow the instructions provided by the vendor.

Known Problems and Limitations

- The controller will not autoconfigure the network media connector properly. Use the `bncaui=1` property in the `dnet.conf` file to force use of the BNC/AUI connector in this case.
- The `dnet` driver does not support netbooting from BNC or AUI network media. You must install from a CD and then make changes to `dnet.conf` as described in "Avoiding Possible Device Conflicts."
- The current release of this driver provides 100-Mb Ethernet support; however, the driver will not be able to transfer the data at rates expected of a 100-Mb interface. The performance of the driver is under study, and a future release of this driver will enhance and address the performance characteristics of this driver.

Intel EtherExpress PRO/100 (82556)

Description

The Intel EtherExpress PRO/100 is an Ethernet controller. Both the EISA and PCI controllers are supported.

Device Configuration

Preparing for Configuration *(PCI Only)*

On some PCI systems, the user has control over assignments of IRQs to ISA and PCI devices. In the chipset configuration of your particular system, verify that an IRQ is enabled for use by the PCI bus. For example, your PCI CMOS setup screen may show the following:

```
IRQ 9     Enabled for ISA card
IRQ 10    Enabled for ISA card
IRQ 14    Enabled for PCI card
IRQ 15    Enabled for PCI card
```

Use this opportunity to toggle your choices from ISA to PCI, or from PCI to ISA, depending on your hardware configuration. It is preferable to assign as many IRQs to PCI devices as possible. By configuring more *available* IRQs for PCI devices, you give the PCI bus additional choices to resolve conflicts.

Avoiding Possible Device Conflicts

Avoid using IRQ 9 because it is often used for the video card in some systems.

Configuring the Device

Intel EtherExpress PRO/100 EISA:

1. **Consult your Device Configuration Worksheet to see if your Intel EtherExpress PRO/100 controller needs to be reconfigured.**
2. **Using the EISA configuration utility, set the following parameters:**
   a. **Disable Flash Memory.**
   b. **Set your Connector Type to TPE.**

c. **If necessary, reconfigure using the software setup program or the diagnostic tools provided by Intel.**

Intel EtherExpress PRO/100 PCI:

1. **Consult your Device Configuration Worksheet to see if your Intel EtherExpress PRO/100 controller needs to be reconfigured.**
2. **If necessary, reconfigure using the software setup program or the diagnostic tools provided by Intel.**

Valid Configurations

Intel EtherExpress PRO/100 (EISA *only*):

- IRQ 3, 7, 12, 15

Known Problems and Limitations

- Due to hardware restrictions, avoid installing the EISA model of the Intel EtherExpress PRO/100 card on systems with a PCI bus.
- (**1216921**) The Intel EtherExpress PRO/100 card cannot be used as a net install boot server.
- (**1212022**) The Intel EtherExpress PRO/100 card cannot net install at 100 Mb.
- Some revisions of `ieef`-supported `pci` network cards may exhibit an intermittent error under heavy stress, where the interface suddenly drops off the network (and carrier sense-lights go off on the card). The bug, under investigation, appears to be a `pci` bus starvation problem.
  Workaround: Use `ifconfig` to reinitialize the card. For example, as root, type:

```
# ifconfig ieef0 down
# ifconfig ieef0 unplumb
# modunload -i 0
# ifconfig ieef0 plumb
# ifconfig ieef0 <IP_Address> netmask + broadcast + -trailers up
```

- The current release of this driver provides 100-Mb Ethernet support; however the driver will not be able to transfer the data at rates expected of a 100-Mb interface. The performance of the driver is under study and a future release of this driver will enhance and address the performance characteristics of this driver.

SMC Elite32 Ultra (8232)

Description

The SMC Elite32 Ultra (8232) board is an EISA based Ethernet controller supporting 10Base-T, AUI, and BNC networks.

Although the hardware supports a Bus Master DMA mode of operation, the Solaris drivers do not make use of it.

The SMC Elite32 Ultra board is supported by the Solaris `smceu` driver.

Device Configuration

Preparing for Configuration

- The board is software configured using the EISA configuration utility along with an EISA configuration file supplied with the board by SMC. There are no jumpers on the board.
- The configuration utility allows the enabling or disabling of Bus Master Mode. The Solaris drivers do not operate the card in Bus Master Mode even if the mode is enabled. It does not matter which setting is selected by the configuration utility.
- You may use the configuration utility to select which Network Connection (Media) Type to use. 10Base-T is always enabled. If your network is AUI or BNC, you must use the configuration utility to ensure that the correct Network Connection Type is selected.
- The configuration utility also allows selection of the IRQ and base RAM address used by the board. You must choose values for these settings that do not conflict with other boards in the system. IRQ settings should be edge-triggered.

The optional ROM is not used by the Solaris drivers and should be disabled.

Configuring the Device

Use the EISA configuration utility to select the desired IRQ and memory base address. Ensure that the Network Connection Type is correct for your network. Set the ROM base address to Disabled.

Valid Configurations

The following parameters are valid for the SMC Elite32 Ultra (8232):

- Network Type AUI or BNC; 10Base-T
- IRQ 3, 5, 7, 9, 10, 11, 15; Edge
- RAM address 0xc0000 to 0xee000, 8K increments
- ROM address Disabled

The board's I/O address is determined by slot number.

Known Problems and Limitations

- The SMC EZStart diagnostic program hangs when testing the board in a Dell Omniplex 466. The card does work in a Dell Omniplex 590 machine. If in doubt, run the diagnostic provided by SMC.
- **(1219282)** The SMC Elite32C Ultra fails to handle RPL request packets as a netboot server.

SMC Ether100 (9232)

Description

The SMC Ether100 (9232) board is an EISA based Ethernet controller supporting both 10Base-T and 100Base-T networks. Although the hardware supports a DMA mode of operation, the Solaris drivers do not make use of it.

The SMC Ether100 board is supported by the Solaris `smcf` driver.

Device Configuration

Preparing for Configuration

- The board is software configured using the EISA configuration utility along with and file supplied by SMC. There are no jumpers on the board.
- The board can be configured for either 10 MBPS or 100 MBPS. Operation at the higher speed using the UTP (Unshielded Twisted Pair) RJ-45 connector requires use of a Category 5 cable.
- The configuration utility also allows setting of the IRQ and DMA channels. The Solaris drivers do not make use of the DMA capabilities of the board, and do not require the selection of any particular DMA channel. The optional ROM is not used by the Solaris drivers and should be disabled.

Configuring the Device

Use the EISA configuration utility to select the desired network speed and IRQ. Set the ROM base address and DMA channel to Disabled.

Valid Configurations

The following configuratiions are valid for the SMC Ether100:

- Speed 10 MBPS or 100 MBPS
- IRQ 3, 5, 7, 9, 10, 11, 15
- DMA Channel Disabled
- ROM Address Disabled

The SMC Ether100 I/O address is determined by slot number. The DMA channel and ROM are not used.

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