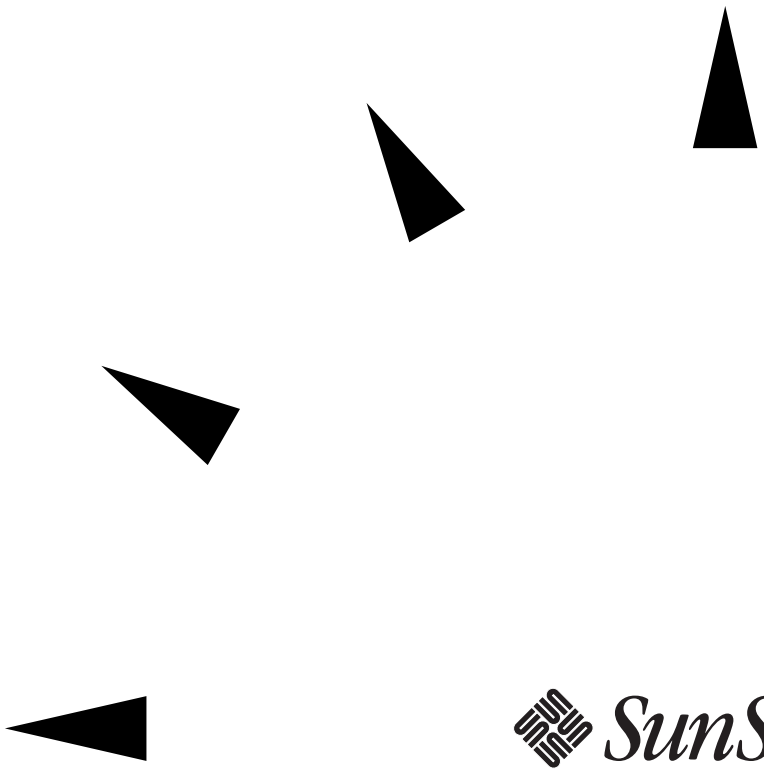
Solaris™ 2.1 for x86 Driver Update
Late Breaking News
for Unisys® U6000 Platforms



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Solaris 2.1 for x86 Driver Update Late Breaking News
for Unisys U6000 Platforms

This document describes the Solaris™ 2.1 for x86 Driver Update that runs on Unisys® U6000 Platforms. This update provides support for the four Unisys systems—two desktop and two server systems—described below.

Supported Unisys Systems

Desktop Systems

There are two models supported in this group, the DT1 and the DT2.

DT1

This is a 2-slot EISA-based machine in a low profile desktop case. The DT1 has an Intel® 486 running at 33 MHz and is field upgradable to the Pentium™ processor. The DT1 can accommodate 192 Mbytes of memory. The following interfaces are available on the DT1 motherboard:

SCSI	Adaptec® 7770
Ethernet	Intel 82596
Video	ATI® Mach32

DT2

This is a 3-slot EISA-based machine in a desktop case. The DT2 has an Intel 486/DX2 running at 66 MHz and is field upgradable to the Pentium processor. The DT2 can accommodate 192 Mbytes of memory. The following interfaces are available on the DT2 motherboard:

SCSI	Adaptec 7770
Ethernet	Intel 82596
Video	ATI Mach32

The DT2 can accommodate an integral CD-ROM, which is currently the Hitachi CDR3750.

Server Systems

There are two models supported in this group, the U6000/100 and the U6000/300.

U6000/100

This is a 7-slot EISA server machine in a deskside cabinet. It uses an Intel 486/DX2 running at 66 MHz and can be configured as a dual processor. The U6000/100 can accommodate 512 Mbytes of memory. The following interfaces are available on the U6000/100 motherboard:

SCSI	Adaptec 7770
Video	ATI Mach32

Ethernet support is available on the U6000/100 via an EISA add-in card. It is built by Unisys and uses the Intel 82596 chip. The U6000/100 can accommodate an integral CD-ROM, which is currently the Hitachi CDR3750.

Note – Some EISA BIOS revisions of this system are not compatible with Solaris software installation. An EISA BIOS revision of V1.07 or later is required for compatibility with the Solaris operating environment.

U6000/300

This is a 7-slot EISA server machine in a deskside cabinet. It uses an Intel Pentium processor running at 60 MHz and can be configured as a dual processor. The U6000/300 can accommodate 512 Mbytes of memory. The following interfaces are available on the U6000/300 motherboard:

SCSI	Adaptec 7770
Video	ATI Mach32

Ethernet support is available on the U6000/300 via an EISA add-in card. It is built by Unisys and uses the Intel 82596 chip. The U6000/300 can accommodate an integral CD-ROM, which is currently the Hitachi CDR3750.

Note – At the time of the printing of this document, this Driver Update was tested on the Unisys DT-2, U6000/100, and U6000/300 systems; the Unisys DT1 system was not tested. Maximum memory configurations were not tested for any of these systems. This Driver Update does not support dual processor configurations for the Unisys U6000/100 and U6000/300 systems.

Overview of the Driver Update

This update contains boot and distribution diskettes that supplement the drivers on the Solaris 2.1 for x86 CD. The drivers on these diskettes will be loaded automatically as part of the installation process. The update includes drivers that support the Unisys U6000 platforms as well as other SCSI and network drivers that are now supported on Solaris 2.1 for x86.

Note – Due to conflicts with other drivers/devices, the `el` driver that supports the 3Com® (3C503) EtherLink® II and EtherLink II/16 Ethernet controllers is not available on Unisys. For this same reason, the `elink` 3Com EtherLink 16 (3C507) driver is also not available on the Unisys diskette.

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

Note – Even though the instructions for installing using the new diskettes are presented first, read and follow the appropriate hardware configuration instructions in the "New Device Configuration Information (SCSI Host Bus Adapters)" or "New Device Configuration Information (Network Adapters)" sections before installation. In particular, the instructions for "Configuring Adaptec AIC-7770/AHA-274x EISA Host Bus Adapters (esa)" on page 15 must be followed, because the Adaptec AIC-7770 is integrated into the motherboards of these Unisys systems. Similarly, the Unisys EISA Ethernet card and the embedded Ethernet controller in the DT systems (both of which use the Intel 82596 chip) require that the instructions for "Configuring the Intel EtherExpress Flash32 (ieef)" on page 24 be followed. Proper hardware configuration is necessary for the Solaris software to run.

Driver Update Contents

The Driver Update contains two diskettes labeled: *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Boot*) and *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Distribution*). The new Boot and Driver Distribution diskettes are intended to be used with a Solaris 2.1 for x86 FCS CD or network boot server; however, they are currently not compatible with the Solaris 2.1 for x86 MP Platform Support Release.

Note – To use the *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Boot*) diskette to update a client of a Solaris boot server, you must first install a new version of `inetboot` on the server. The procedure for doing this differs on a SPARC® boot server and an x86 boot server. See "Installing the Driver Update on a Network Boot Server" on page 6.

New Boot Diskette

Solaris 2.1 for x86 can be installed on Unisys U6000 Platforms with a new boot diskette labeled *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Boot*). This Multiple Device Boot (MDB) diskette contains scripts and configuration files that allow you to boot and install your system using one of the newly supported devices. During installation of the Solaris operating environment, a second diskette labeled *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Distribution*) will be read.

New Driver Update Distribution Diskette

The *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Distribution*) diskette contains the following new and updated device drivers and new Protected-Mode Interface (PMI) files. PMI files allow the OpenWindows™ server to interface properly with display cards:

SCSI HBA Drivers	
`aha`	Updated Adaptec 154*x* driver that supports the 154*x*CF (fast SCSI)
`dadk`	Updated Direct Access Disk module (required for `dsa` driver)
`dsa`	Dell® SCSI Array
`esa`	Adaptec AIC-7770 driver that supports the AHA-2740, AHA-2742, and motherboards that integrate the 7770 chip, such as the Intel Xpress
Network Drivers	
`gld`	Updated Generic LAN Driver module (required for `iee`, `pe`, and `smce`)
`iee`	Intel EtherExpress™ 16, EtherExpress FlashC
`ieef`	Intel EtherExpress Flash32, Unisys EISA Ethernet card (Intel 82596 chip), Unisys embedded Intel 82596 Ethernet controller (used on DT1 and DT2 systems)
`lp`	Updated `lp` driver (required for `pe`)
`mtok`	Madge™ Token Ring (Smart 16/4 Ringnode™)
`pe`	Xircom® Pocket Ethernet Adapter™ II, III (parallel port)
`smc`	Updated SMC® driver to include support for the SMC Elite16 Ultra
`smce`	SMC Elite32 Ethernet (8022)

Support for the Unisys ATI Mach32 embedded video controller (@ 1024 x 768, 72 Hz) is also included on the *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Distribution*) diskette.

Note – The DPT 2022 (EISA) and the 2021 (ISA) host bus adapters are now also supported by the Solaris 2.1 `dpt` driver. This driver did not require any modifications to support these new boards, but the hardware configuration information is supplied in this document. See “Configuring DPT 2022 EISA Host Bus Adapters (dpt)” on page 20 and “Configuring DPT 2021 ISA Host Bus Adapters (dpt)” on page 22.

The *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Distribution*) diskette is read when the *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Boot*) diskette is used to install Solaris for x86. The Distribution diskette can also be used by itself, however, to add new drivers and new PMI files to an existing Solaris for x86 system.

Installing the Driver Update on a Network Boot Server

To use the *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Boot*) diskette to update a client of a boot server, you must first install a new version of `inetboot` on the boot server. The procedure for doing this differs on a SPARC boot server and an x86 boot server.

Updating an x86 Boot Server

A new version of `inetboot` is provided on the *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Distribution*) diskette and is automatically installed when you follow the instructions under “Adding New Drivers After Solaris Is Installed” on page 12 on the server. This will install both the new drivers and the modified `inetboot` so that boot clients can use the Driver Update boot procedure as described under “Installing Solaris Using the Driver Update Diskettes” on page 7.

Updating a SPARC Boot Server

A new version of `inetboot` must be manually installed on a SPARC server. Before this can be done, however, the following two conditions must be met:

1. **Solaris 2.2 SPARC servers must have patch number 101085-01 installed and Solaris 2.3 SPARC servers must have patch number 101350-01 installed.**
   These patches are needed to make SPARC boot servers service x86 clients.

2. **At least one boot client must be set up.**
   The `/rplboot` directory will not exist until a boot client is set up.

▼ Updating `inetboot` on a SPARC server

1. **Become superuser.**
2. **Insert the *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Distribution*) diskette into the diskette drive.**
3. **Determine the name of your diskette drive.**
   This varies depending on whether you have enabled Volume Management on your diskette drive. In this example, *diskette_drive_name* will be used.
4. **Enter the following commands at the Bourne or Korn shell prompt:**

```
# mkdir /tmp/Drivers
# cd /tmp/Drivers
# cpio -icduB < diskette_drive_name
# unpack cpioimage
# cpio -icudB < cpioimage
# cp 101365-01/SUNWcsu/reloc/usr/lib/fs/nfs/inetboot.i86pc
/rplboot/inetboot.i86pc.Solaris_2.1
# cd /tmp
# rm -rf Drivers
```

You can now use the Driver Update to add drivers to old or new x86 clients of the SPARC boot server as described in the next section.

Installing Solaris Using the Driver Update Diskettes

To install Solaris for x86 on a new system, follow the instructions described in the *Solaris 2.1 System Configuration and Installation Guide for x86*, except use the diskette labeled *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Boot*) instead of the *Solaris 2.1 for x86 Boot* diskette.

Installing using the Driver Update *Boot* diskette is much like installing with the *Solaris 2.1 for x86 Boot* diskette. 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.

Note – The correct disk size may not be recognized during the installation of the Solaris software. See the description under "Known Problems" (number 3002509) on page 10 for a workaround.

Late in the install process, after all the standard packages have been installed, new driver packages will be installed from the Driver Update *Distribution* diskette. At the start of that phase of the installation, one of the install scripts will ask you to insert the Driver Update *Distribution* diskette into the drive. When 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 to press Enter.

After this is accomplished, the system will reboot as usual. When it comes up, the new device drivers should be completely installed and functional.

Note – During installation, the device configuration program, `devconfig`, is invoked to allow the user to specify the type of sound card (if present), keyboard, mouse, and video display adapter. However, the standard Solaris 2.1 installation program will not be able to detect the presence of the Unisys mouse and display adapter because the proper mouse and window drivers are not yet loaded from the Driver Update *Distribution* diskette. To skip the device configuration for those two devices, select "Continue Install" from the Device Configuration screen and select (Yes) when asked "You have not configured the keyboard, pointing device, and screen devices needed for the operation of the windowing system. Do you still wish to exit?" (See Chapter 5 in the *Solaris 2.1 System Configuration and Installation Guide for x86*.) Installation will then continue normally, and you will be able to configure these devices after installation is completed.

Configuring the Mouse and Video Display

Before attempting to start the OpenWindows environment, `devconfig` must be run to specify the type of mouse and video display adapter. Perform the following steps as user `root` (during installation you are asked to enter a `root` password).

1. **Log in on the console as** `root`**.**
2. **Invoke the command**: `devconfig`
   The Device Configuration screen will appear.
3. **Select** Add**.**
4. **Select** Pointing Devices**.**
5. **Select** PS/2 style built in mouse**.**
6. **Select the appropriate IRQ.**
7. **Select** Buttons: [3]**.**
8. **Select** Apply**.**
9. **Select** Add**.**
10. **Select** Video display adapters.
11. **If your monitor supports 1024 x 768 @ 72 Hz refresh, then select the entry** ATI 68800 Mach32 72 Hz Non-Interlaced**. Otherwise, select the entry** ATI 8514/A**.**
12. **Select the screen size appropriate to your monitor.**
13. **Select** Apply**.**
14. **At the Device Configuration screen, select** (Continue Install ...)**.**
    The system will update the appropriate files to allow proper utilization of the mouse and video adapter chip.

Known Problems

Correct disk size may not be recognized during Install *3002509*

Disks not previously installed with Solaris or DOS will show up on the Disk Preparation Utility Screen as containing 0 MB.

Workaround: `FDISK` must be run to create a valid table of contents. This must be done for each disk that shows up as "0 MB - unconfigured" on the Disk Preparation Utility screen. To do this, do the following:

1. **Select the Local Disks and File Systems menu from the Disk Preparation Utility screen.**
2. **Select** Run FDISK**.**
3. **Accept the use of the entire disk for Solaris.**
4. **Select** Run FDISK **again.**
5. **Select** Apply**.**

If `FDISK` is not run twice, the disk will continue to show up as having 0 MB and you will not be able to configure file systems on it.

Driver Update cannot be used on systems with IBM Token Ring *1153133*

If you try to install onto a system with an IBM® or compatible Token Ring card using the Driver Update diskettes, your system will hang. Contact SunSoft Customer Support at (310) 348-6070 for information on how this configuration can be supported.

`/var` *must not be on separate file system* *1149157*

If you try to install onto a system using the Driver Update *Boot* diskette, and you specify a separate `/var` file system, the `installpatch` script will fail when it attempts to ascertain whether there is enough disk space.

Workaround: Don't use a separate `/var` file system.

Warm reboot causes Solaris to hang configuring network 1165526

After booting DOS, and then doing a warm reboot to load Solaris, the system may lock up on the boot message
"`Configuring network interfaces: . . . .`"

Workaround: Do a hard reset before booting Solaris.

Running `devconfig` *after a 3-button mouse is selected shows 2-button 1165570*

If a 3-button mouse is selected during `devconfig`, the next time you run `devconfig`, it incorrectly indicates that a 2-button mouse is configured, even though the OWconfig file has been updated correctly for a 3-button mouse.

Workaround: Verify that the mouse is correctly configured by looking at the contents of the `/usr/openwin/lib/OWconfig` file and searching for a string that says "`buttons=3`."

`devconfig` *does not display Adaptec 7770 or Intel 82596 1165523*

The Adaptec 7770 SCSI adapter and the Intel 82596 Ethernet adapter do not show up on the list of devices displayed by `devconfig`, even though they have been properly configured into the Solaris kernel.

Installing New Drivers After Solaris Is Installed

If you already have the Solaris software installed, the simplest way to add one of the new drivers to your system is to obtain the *Solaris 2.1 for x86 Driver Update for Unisys U6000 Platforms (Distribution*) diskette and install it as a patch on your Solaris for x86 system.

Note – Before adding new drivers, the newly supported hardware devices should be installed and configured according to the instructions under "New Device Configuration Information (SCSI Host Bus Adapters)," which starts on page 13, or "New Device Configuration Information (Network Adapters)," which starts on page 23. In particular, the instructions for "Configuring Adaptec AIC-7770/AHA-274x EISA Host Bus Adapters (esa)" on page 15 must be followed, because the Adaptec AIC-7770 is integrated into the motherboards of these Unisys systems. Similarly, the Unisys EISA Ethernet card and the embedded Ethernet controller in the DT systems (both of which use the Intel

82596 chip) require that the instructions for “Configuring the Intel EtherExpress Flash32 (ieef)” on page 24 be followed. Proper hardware configuration is necessary for Solaris to run.

▼ Adding New Drivers After Solaris Is Installed

Follow these procedures to install the new and updated drivers:

1. **Insert the Driver Update *Distribution* diskette into drive 0.**
2. **Become superuser.**
3. **Use `cpio` to copy the install script off the diskette and run it.**

```
# mkdir /tmp/Drivers
# cd /tmp/Drivers
# cpio -icduB < /dev/rfd0c
# ./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.**

When the system comes up, the new device drivers should be completely installed and functional. However, if you are replacing a network card with a newly supported network card, there are additional steps you must take.

Replacing a Network Card

If you have replaced your network card with one that uses a new network driver (for example, `smce`, or `mtok`), 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 an SMC Elite16 with an EtherExpress 16, you would need to run the following command:

```
mv /etc/hostname.smc0 /etc/hostname.iee0
```

Note – If you are installing a network card for the first time, there are additional files that need to be updated manually. The instructions for adding a network card after the Solaris software is installed can be obtained by calling SunSoft Customer Support at (310) 348-6070.

Known Problems

Driver Update can not be used on systems with IBM Token Ring 1153133

If you try to install the Driver Update onto a system with an IBM-compatible Token Ring card, your system will hang. The Driver Update is currently not supported on systems with IBM-compatible Token Ring cards installed. If your system is configured this way and you wish to install the Driver Update, contact SunSoft Customer Support at (310) 348-6070 for information on how this configuration can be supported.

New Device Configuration Information (SCSI Host Bus Adapters)

The following sections describe configuration information for newly supported devices. The information in this section supplements the information in the "Pre-Installation Notes" chapter of the *Solaris 2.1 Release Notes for x86* and the "Configuring Hardware Prior to Installation" section in *Solaris 2.1 Late Breaking News for x86.*

For each newly supported device, a summary of the known problems follows the configuration information. The known problems are identified by problem ID number and include a synopsis and a workaround, if available.

Configuring Adaptec AHA-1540CF and AHA-1542CF ISA Host Bus Adapters (`aha`*)*

The `aha` driver, which supports the Adaptec AHA-1540 and AHA-1542 ISA host bus adapters, has been enhanced to support the 1540CF and 1542CF controllers to operate in FAST SCSI-2 mode. This allows them to be used with fast SCSI drives such as the Seagate ST 11200N.

The same configuration information supplied for the 1540 and 1542 adapters in the *Solaris 2.1 Release Notes for x86* apply to the 1540CF and 1542CF with one addition. The 1540C, 1542C, 1540CF, and 1542CF have an option that should be disabled using the manufacturer-supplied setup utility. The option to support greater than 1 Gbyte (1024 cylinders) on the disk (Extended BIOS Translation for DOS Drives > 1 GByte) should be disabled. The rest of the configuration parameters are repeated here for convenience.

Verify that your Adaptec 1540CF or 1542CF is set to these parameters using the built-in, menu-driven program for configuring HBA options:

- IRQ — Any legal value between 9-15
- DMA Channel — 6
- I/O Address — 0x330

Note – The DMA transfer rate for the 1540CF should be left at the default unless your motherboard supports higher rates.

Use of the built-in configuration program and DIP switch assignments are documented in the installation guide that comes with the Adaptec 154*x*C board.

Note – Be sure to use *all* default configuration parameters in both basic and advanced modes for the 1540C and 1542C; the only exception is to disable Synchronous Negotiation for CD-ROM drives. For the 1540C, 1542C, 1540CF, and 1542CF, support for more than 1 Gbyte (1024 cylinders) on the disk should be disabled.

*Configuring Adaptec AIC-7770/AHA-274x EISA Host Bus Adapters (*esa*)*

The esa driver supports the Adaptec AHA-2740 and AHA-2742 host bus adapters, and motherboards that integrate the Adaptec AIC-7770 chip such as the Intel Xpress.

▼ Installing the Controller Board

1. **Ensure that the SCSI bus is properly terminated.**
2. **For systems with two channels, whether on the motherboard or on the EISA 274*x* controller, make sure the boot device is on the first channel (A) and is target 0.**
   The hard disk drive that will be used to boot the Solaris operating environment must be connected to channel A.

▼ EISA Configuration

1. **Run the EISA configuration utility supplied by the vendor, and load the configuration file for the Adaptec controller.**
2. **Choose any valid IRQ that does not conflict with other devices in the system.**
3. **Select channel A as the Primary Channel.**

▼ BIOS and SCSI Device Configuration

Run the BIOS configuration and make sure:

- BIOS support for drives greater than 1 GByte is disabled.
- BIOS support for more than two drives is disabled.

Note – If you have a motherboard with an AMI BIOS, the Adaptec 2740 EISA configuration file requires version 2.01 or later of the AMI EISA configuration utility.

Configuring the Dell SCSI Array Controller to Install Solaris (`dsa`)

These instructions assume you have a Dell SCSI Array controller that will be used during the installation of Solaris as the primary controller. If you already have Solaris installed and the Dell SCSI Array controller is being added as a secondary controller, follow the instructions under “Configuring the Dell SCSI Array Controller as a Secondary Controller (dsa)” on page 18.

▼ Installing the Controller Board

1. **Ensure that the controller is properly installed in any slot between 1 and 8.**
2. **Do not use targets 0 or 7 for any SCSI device.**
3. **Install your CD-ROM as target 6 on channel 0 of the DSA controller.**
   If you have two DSA controllers, the CD-ROM must be attached to the one in the lower numbered EISA slot.
4. **The disk drive(s) which will make up your bootable composite drive must be on channel 0 of the DSA controller.**
   If you have two DSA controllers, the boot disk(s) must be attached to the one in the lower numbered EISA slot.
5. **Ensure that each SCSI bus is terminated at the physical ends of the bus.**

▼ EISA Configuration

1. **Run your computer’s EISA configuration utility so that the system will recognize the Dell controller.**
2. **Enable the Dell DSA 16-bit ROM BIOS.**
   On some systems this may be called the Option ROM Address.
3. **Make sure that the Enhanced Mode Address is 16-bit enabled.**
4. **Enable Adaptec 1540 emulation on the DSA controller in the lowered numbered EISA slot only, the one with the CD-ROM attached.**

Note – During the EISA Configuration, if you need to manually edit the BIOS Base Address and you have two DSA controllers, make sure the controller in the lower numbered EISA slot has an address that is lower than the second one. This forces the BIOS to spin up the disks on the secondary controller so that they are accessible after a cold boot.

▼ Dell Disk Manager Setup

Note – If your disk did not come from Dell, you must use the Dell Disk Manager Setup to low-level format the hard disk. This should be done prior to step 1 below.

1. **Set up one or more composite drives with the Dell DOS software array manager program.**
2. **Make one composite drive on controller 1 “Drive 0 - Composite Drive A.”** This will be the drive containing the bootable Solaris partition.
3. **You can select any raid level supported by the controller.**

Note – All disks accessible by Solaris for x86 (except the CD used during the initial installation) must be composite drives, composed of one or more physical drives.

4. **Enable Adaptec 1540 emulation on the CD drive.**
   a. **Set targets 0-5 to OFF.**
   b. **Set target 6 to emulate the CD drive, SCSI ID 6.**
   c. **Set target 7 to emulate the controller ID.**
5. **Save your configuration changes.**

Configuring the Dell SCSI Array Controller as a Secondary Controller (`dsa`)

Note – These instructions assume you already have another controller configured to be the primary (boot) controller for Solaris and you are now adding a Dell SCSI Array controller as a secondary controller. If you need to install Solaris using the Dell SCSI Array controller as the primary boot controller, follow the instructions under "Configuring the Dell SCSI Array Controller to Install Solaris (dsa)" on page 16.

▼ Installing the Controller Board

1. **Ensure that the controller is properly installed in any slot between 1 and 8.**
2. **Do not use targets 0 or 7 for any SCSI device.**
3. **Ensure that each SCSI bus is terminated at the physical ends of the bus.**

▼ EISA Configuration

1. **Run your computer's EISA configuration utility so that the system will recognize the Dell controller.**
2. **Enable the Dell DSA 16-bit ROM BIOS.**
   On some systems, this may be called the Option ROM Address.

▼ Dell Disk Manager Setup

Note – If your disk did not come from Dell, you must use the Dell Disk Manager Setup to low-level format the hard disk. This should be done prior to step 1 below.

1. **Set up one or more composite drives with the Dell DOS software array manager program.**
2. **You can select any raid level supported by the controller.**

Note – All drives accessible by Solaris for x86 must be composite drives, composed of one or more physical drives.

3. Save your configuration changes.

Known Problems

The `dsa` ***driver causes panic*** ***1146857***

Under some configurations, after several hours of a heavy stress test, the system may panic with the following error message:

```
panic: i86mmu_free: didn't free pptbl!
```

Install patch number 101552-01 to correct this problem. This patch is available through SunSoft Customer Support by calling (310) 348-6070.

`diskprep` ***fails to configure more than six composite drives*** ***1148908***

A *composite drive* is a Dell SCSI Array term which refers to a logical disk that the controller has constructed out of one or more physical disks. With the Dell SCSI Array, you cannot create more than six composite drives or the installation program will dump core. Also, with six composite drives, the Disk Prep window will overlap other items on the screen, such as the "Continue Installation" selection.

Workaround: Do not use more than six composite disks on one controller during installation. You may add more after the Solaris operating environment is installed, however.

Configuring DPT 2022 EISA Host Bus Adapters (`dpt`*)*

The Solaris 2.1 for x86 `dpt` driver, which supports the DPT 2012 EISA host bus adapter, also supports the DPT 2022. You must run the DPT SCSI Storage Manager Utility, DPTMGR, under MS-DOS® (DOS) and select Solaris as the operating system. This must be done prior to installing Solaris.

Note – The PROM revisions on the board should be the latest. The BIOS PROM must be at revision level 5C and the SmartROM PROM must be at revision level 2C. Earlier revisions (A or B PROMS) will cause problems with the Solaris software. The Storage Manager Program revision should be rev 1C.

If your board has an earlier release of firmware, contact your DPT representative for a BIOS/SmartROM upgrade.

▼ Installing the Controller Board

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.

▼ EISA Configuration

See the *DPT SmartCache III User's Manual* for a description of its EISA configuration program and perform the following steps:

1. **Boot DOS from the diskette drive.**
2. **Insert the user copy diskette of the EISA configuration utility (CF.EXE) containing the !DPTxxxCFG files.**

3. **Make sure the following parameters are set as follows:**

WD1003 Boot Address	**Enabled at Primary**
IRQ	**Any legal entry between 11-15, except 14 (the first controller should be at IRQ 15)**

Note – Make sure you use Edge-triggered interrupts.

SCSI BIOS ROM Address	**Default**
HBA SCSI ID	**Default 7**

▼ DPT SCSI Storage Manager Utility

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. The driver will be installed when the Driver Update software is installed.

Known Problems

The system may hang when rebooting *1152948*

A system with a DPT 2021 or 2022 HBA installed may hang when the command "`uadmin 2 x`" is run. `uadmin` is called by both the `reboot` and `halt` commands.

Workaround: If your system hangs, press RESET to reboot the system.

Driver reports presence of DPT 2012 controller when 2022 installed

During installation, the real mode boot code reports the presence of a DPT 2012 controller even when a 2022 is installed.

*Configuring DPT 2021 ISA Host Bus Adapters (*dpt*)*

The Solaris 2.1 for x86 dpt driver, which supports the DPT 2011 ISA host bus adapter, also supports the DPT 2021. You must run the DPT SCSI Storage Manager Utility, DPTMGR, under DOS and select Solaris as the operating system. This must be done prior to installing Solaris.

The following DPT 2021 ISA jumper settings should be set as follows:

IRQ	**Any legal entry between 12-15, except 14 (the first controller should be at IRQ 15)**
I/O Address	**0x1F0 or 0x170**

All other jumpers should be set to their defaults as described in Appendix D of the *DPT SmartCache III User's Manual*.

▼ Installing the Controller Board

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.

▼ DPT SCSI Storage Manager Utility

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. The driver will be installed when the Driver Update software is installed.

Known Problems

The system may hang when rebooting *1152948*

A system with a DPT 2021 or 2022 HBA installed may hang when the command "`uadmin 2 x`" is run. `uadmin` is called by both the `reboot` and `halt` commands.

Workaround: If your system hangs, press RESET to reboot the system.

Driver reports presence of DPT 2011 controller when 2021 installed

During installation, the real mode boot code reports the presence of a DPT 2011 controller even when a 2021 is installed.

New Device Configuration Information (Network Adapters)

Configuring the Intel EtherExpress 16 Adapter (`iee`)

When using any version of the EtherExpress 16 adapter, you must use the SOFTSET configuration utility to manually configure which connector to use. This DOS program is supplied by the network card manufacturer and is contained on a diskette that comes with the board.

Note – Auto-detect is currently not supported.

Known Problems

When you use the boot floppy to select booting from the Intel EtherExpress 16 Ethernet Adapter, on rare occasions you will see the error message:

```
AdapterISR(): wait scb failed.
```

The next reboot usually recovers from this problem.

Configuring the Intel EtherExpress Flash32 (`ieef`*)*

Be sure to disable Flash Memory using the EISA configuration utility that comes with your system. Also, you must select your "Connector type" explicitly; the default (Auto Detect) is not supported.

Known Problems

Network won't come up if booted without cable ***1160936***

If a system with an Intel EtherExpress Flash32 network card is booted without the network cable plugged in, the network will not come up, even if the cable is plugged in later.

Workaround: Make sure the cable connecting the Intel EtherExpress Flash32 to the system is connected before booting the system.

Data corruption and system hangs during stress tests ***1157217***

Running `snoop` on some systems using the `ieef` driver where the system includes the OPTI chip set can cause system hangs and data corruption. `snoop` induces very heavy loads on the network interface.

Workaround: If you see these symptoms, don't run `snoop`.

Configuring the Madge Token Ring Adapter (`mtok`*)*

The Madge SMART 16/4 AT® Ringnode token ring adapter (ISA) has an on-board jumper for enabling or disabling the use of DMA and selecting DMA channels. DMA must be ENABLED under Solaris for proper operation.

The driver may produce error messages during booting and configuration. In those cases where error messages are expected, they will be preceded by the following message (the io location in the message will vary):

```
You may see some WARNING messages from the system. Please
ignore these as the driver is trying to find the interrupt
number of the Madge ISA card at io location Oxa20.
```

Note – To use a Madge token ring adapter as a network installation server, patch #101079-01 must be installed on the server. This patch is available through SunSoft Customer Support by calling (310) 348-6070.

Note – Network booting (that is, `netinstall` or diskless client) using the Madge token ring adapter is currently not supported. However, a system with a Madge card can be CD-installed and will come up on the net automatically on reboot following installation.

Known Problems

No realmode driver for the Madge token ring card *1144115*

Solaris supports the use of the Madge token ring for normal network operations. However, at this time it may not be used by a client machine to install Solaris from a network boot/install server. Once Solaris has been installed from another network adapter or from a CD-ROM, the Madge token ring network adapter can be used.

`/dev/mtok` *not created when two boards in system* *1149755*

If a system with two Madge token ring cards is installed with the Driver Update, it fails to create `/dev/mtok`.

Workaround: If this occurs, you can create the link manually using the commands:

```
# cd /dev
# ln -s ../devices/pseudo/clone:mtok mtok
```

After rebooting the system, the network should then be available.

`mtok` *cannot be used on systems with IBM Token Ring cards* *1153133*

The Madge token ring card and driver (`mtok`) cannot be used on systems with an IBM-compatible Token Ring card installed.

Multicasts addressing not applicable to token ring technology *1144398*

When you boot a machine with a token ring card in it, you get the following message:

```
ip_rput: DL_ERROR_ACK for 29, errno 1, unix 0
ip: joining multicasts failed on mtok1 - will use link layer
broadcasts for multicast
```

This message can be ignored.

Token ring incompatibility with `snoop` *1146735*

When you try to run `snoop` on a token ring, you get the message:

```
"snoop: Mac type = 2 is not supported"
```

At this time you cannot run `snoop` using a token ring device.

Configuring the SMC Elite and SMC Elite Ultra Adapters (`smc`*)*

An updated driver is provided to support the latest SMC Elite Ultra family of Ethernet adapters. This driver specifically supports the SMC 8216 family of ISA bus Ethernet adapters. This updated driver supersedes the existing `smc` driver and will continue to support all the previous SMC/WD 80x3 Elite family of ISA and Micro Channel® Architecture Ethernet adapters.

The same configuration information supplied for the SMC network adapters in the *Solaris 2.1 Release Notes for x86* apply to the SMC Elite and SMC Elite Ultra. They are repeated here for convenience.

Newer SMC network adapters have a jumper labeled “SOFT” and should be configured using the software setup program provided by SMC. The shared memory address must be between 0xC0000 and 0xDE000.

Older SMC boards (without a jumper labeled “SOFT”) are only supported in the following three configurations:

IRQ	I/O Address	Base Memory Address (Board RAM)
3	0x280	0xD0000
5	0x2A0	0xD4000
5	0x300	0xD4000

Refer to the SMC documentation for details on setting the jumpers for one of these configurations.

Note – The 8003 board has a limited amount of on-board memory which causes very poor NFS® system performance. To avoid this problem, it is recommended that NFS mounts over the 8003 interface use a 4K read/write buffer size. See the `mount_nfs(1M)` manual page for more details on configuring the NFS environment. This problem can also impact installation of Solaris over the network, causing occasional NFS warnings (which can be ignored).

Configuring SMC Elite32 EISA Ethernet Network Adapters (`smce`)

The SMC Elite32 is a dual channel Ethernet adapter so you get two network interfaces for each board that you install in the system. Thus both `smce0` and `smce1` are available for the first board installed, `smce2` and `smce3` are available for the second board installed, and so forth.

Installing the Adapter Board

SMC Elite32 Ethernet adapters come in two possible network connector configurations. One configuration has both the AUI and the BNC-type connectors, while the other has both the AUI and 10BaseT-type connectors. Both configurations allow channel 0 to have a choice of connectors, but channel 1 is limited to the use of the BNC or 10BaseT-type connector, *not* the AUI connector.

EISA Configuration

1. **Specify the network connector for channel 0.**
   You can use the EISA configuration utility to select which type of connector you've chosen for channel 0.

Note – If you have connected a transceiver to the AUI connector, the board will use the AUI connection regardless of what connector has been selected in the EISA configuration.

2. **Set the IRQ level if needed.**
   In the EISA configuration of the SMC Elite32 Ethernet board, the IRQ value is usually automatically determined by the system. It does this by finding the first available IRQ level that is known to the EISA configuration program. If the system contains ISA adapters whose IRQ settings have not been entered into the EISA configuration utility, however, the chosen IRQ level may conflict with that of an ISA adapter. This will impact system performance or render the network adapter unable to communicate on the network. You can override the automatic assignment of the IRQ level by manually editing the details and selecting an appropriate IRQ level for the Elite32 adapter.

Network Installation

Network installation must be performed through channel 0 of the first adapter. All installation questions regarding network configuration should be answered with respect to the channel 0 connection.

Known Problems

The* `smce` *driver hangs system when* `snoop` *is run ***1149552***

The `smce` driver hangs the system when `snoop` is run.

Workaround: Don't run `snoop` using the `smce` driver.

Configuring Xircom Pocket Ethernet Adapters (`pe`*)*

The Xircom Ethernet adapters (models PE3 and PE2) are very easy to install: they have no switches or software-setable options and do not require any manual configuration. Just make sure that the Ethernet adapter is powered up before Solaris tries to bring up its networking services.

Caution – The system should be powered down to attach the adapter, following manufacturer's instructions.

Note – Network booting is supported only for model PE3, not PE2.

The Xircom driver automatically senses whether the parallel port is uni-directional or bi-directional, and takes advantage of the faster operation that is possible with a bi-directional parallel port.

For combo (BNC and 10Base-T) adapters, the adapter will automatically sense which connector has a cable connected, and the driver will automatically be configured for that type of connection.