Driver Update 1 Guide for Solaris 2.6 (Intel Platform Edition)

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Contents

Preface

This document provides information about x86 hardware devices that are now supported in the Solaris™ 2.6 computing environment. Typically, as new drivers become available, they are bundled with a release in a separate Driver Update. You can use a Driver Update to install a new system for the first time or to update your installed Solaris 2.6 system with new and updated drivers.

Since Driver Updates are cumulative distributions for a given Solaris release, "New Device Functionality" on page 1 in Chapter 1 describes what's been added or changed since the release of Solaris 2.6 *Intel Platform Edition*. You only need to install the current Driver Update to get the support described in this document.

Note - The term "x86" refers to the Intel 8086 family of microprocessor chips, including the Pentium and Pentium Pro processors and compatible microprocessor chips made by AMD and Cyrix. In this document the term "x86" refers to the overall platform architecture, whereas *"Intel Platform Edition"* appears in the product name.

Before You Read This Book

The importance of configuring your hardware before Solaris installation is discussed in the Configuring Devices module in *Information Library for Solaris 2.6 (Intel Platform Edition)* (part of Solaris 2.6 System Administrator Collection Vol 1 at `http://docs.sun.com`). This document assumes you have fully read and understood that module.

The Device Reference Pages in this Driver Update supersede those in the Configuring Devices module and contain device configuration information

for hardware supported by new or updated drivers. The installation instructions in this Driver Update supplement the instructions in *Information Library for Solaris 2.6 (Intel Platform Edition)* and *Solaris Advanced Installation Guide* in Solaris 2.6 System Administrator Collection Vol 1.

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- Contact your Sun Software Support Provider.
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CHAPTER 1

Driver Update 1 for Solaris 2.6 (Intel Platform Edition)

Driver Update 1 (DU 1) provides additional driver support for Solaris 2.6 and must be used with this release.

New Device Functionality

Device Drivers

This table lists device drivers in Driver Update 1 that contain new and updated functionality added since the release of Solaris 2.6 *Intel Platform Edition*. A new or updated Section 7D man page for each of the drivers that added new device support is installed in the appropriate `man` page directory during installation.

Note - With the release of Driver Update 1, drivers are assigned a version number. Note that drivers produced by third-party driver developers are assigned the version number used by that third-party developer and may therefore differ.

TABLE 1–1 New and Updated Drivers in This Driver Update

SCSI Host Bus Adapters		
`aha`	Version 2.1	Fixed bugs, among them one that prevented users from net installing using an AHA-1540 MCA card, one that caused a delay when scanning devices, and three that relate to stress tests; added support for inserting two AHA cards in the same PC at the same time
`cpqncr`	Version 3.0	Fixed bugs
`eha`	Version 2.1	Removed some non-conforming code; functionality remains unchanged
`mcis`	Version 2.1	Cleaned up the code; functionality remains unchanged
`ncrs`	Version 2.1	Added support for new version of the BIOS that comes with the Symbios Logic (also NCR) controllers that are already supported by this driver
Ethernet Network Adapters		
`cnft`	Version 4.5	Fixed bugs
`pcn`	Version 2.1	Fixed bugs (both realmode and protect-mode); added support for AMD PCnet-PCI II and PCnet-Fast cards and for Cabletron E-2210 cards
Token Ring Network Adapters		
`mtok`	Version 3.00.02	New Madge Smart 16/4 adapter
PC Card (PCMCIA) Hardware		
`pcata`	Version 2.1	Fixed a bug so tools like `format` won't try to access the Viper 8260pA or SanDisk Flash PC Card if it isn't inserted in the socket

Driver Update Contents

Driver Update Diskette

The diskette labeled Solaris 2.6 Driver Update 1 Diskette is read when you use the new Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette to install the Solaris 2.6 operating environment. Alternatively, you can use the Driver Update Diskette without the Device Configuration Assistant Diskette to add new and updated drivers to an existing x86 based system running the Solaris 2.6 release.

Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette

If you are installing Solaris 2.6 *Intel Platform Edition* and you want to install the drivers in Driver Update 1, you must use Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette instead of the Solaris 2.6 Device Configuration Assistant diskette you received with Solaris 2.6 *Intel Platform Edition*.

You can download Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette from `http://access1.sun.com/drivers`.

This diskette contains scripts and configuration files that enable you to boot and install your system using one of the newly supported devices.

Driver Update 1 Release Notes

For a complete list of the known problems that are fixed in this Driver Update, see the `README` files that get installed in the patch directories `/var/sadm/patch/`*patch-number*.

- Third-party drivers are provided for the convenience of Solaris customers and are tested to ensure that they meet acceptable standards of operability. SunSoft cannot be responsible for their inclusion in a given release or the timeliness of their availability.
- Due to conflicts, the IBM Micro Channel SCSI-2 Fast/Wide Adapter/A should not be installed until the Solaris Micro Channel `mcis` driver is disabled.

- To prevent conflicts with the `tr` driver, the `mtok` driver is disabled by default, and special steps must be taken to enable it. See "Madge Smart 16/4 Token Ring (DU 1)."

Installing Solaris Using the Driver Update

The procedure to install the Solaris environment using a Driver Update is changed with the Solaris 2.6 release. Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette includes a Configuration Assistant program that finds and configures devices for you. Use this diskette to boot the Solaris 2.6 operating environment and Solaris 2.6 Driver Update 1 Diskette to install and update device drivers.

Follow these steps:

1. **Insert Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette into your machine's diskette drive (Version 1.1 replaces the diskette provided with Solaris 2.6 *Intel Platform Edition*).**

2. **Turn on your machine.**

3. **When the Solaris Device Configuration Assistant screen is displayed, press F4_Driver Update.**

   The message "Enumerating buses ..." is displayed. The Install Driver Update screen is then displayed.

4. **Remove Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette from the diskette drive and insert Solaris 2.6 Driver Update 1 Diskette.**

Note - Do not insert Solaris 2.6 Video Driver Update 1 Diskette in the diskette drive at this point. You are prompted to insert this diskette later.

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5. **Press F2_Continue.**

   The Select Solaris System Version screen is displayed.

6. **Select Solaris OS 2.6 and press F2_Continue.**

   The Loading Driver Update Software screen is displayed, along with a progress bar that shows the percentage of drivers that have been extracted from the diskette. Drivers are read into memory and survive long enough for the system to successfully boot to its installation program. When all the new and updated drivers on the diskette have been processed, the Continue Driver Update Installation screen is displayed.

7. **When all the drivers you want are processed, press F4_Done on the Continue Driver Update Installation screen.**

   The Identified Device Drivers screen is displayed. A list of identified drivers obtained from the Solaris 2.6 Driver Update 1 Diskette is displayed for the particular machine on which you're installing the drivers.

8. **If a driver you want isn't listed, check the Hardware Compatibility List to confirm that your hardware is in fact supported by the driver you selected, and repeat the previous steps if necessary.**

   Otherwise, press F2_Continue.

   The Solaris Device Configuration Assistant screen is displayed.

9. **Press F2_Continue.**

   The following messages are displayed:

```
Enumerating buses ...

Please insert the boot floppy (volume ''DU1_D1 :'') in Driver A.
Press ENTER to continue
```

10. **Remove Solaris 2.6 Driver Update 1 Diskette from the diskette drive, and reinsert Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette.**

    Do *not* remove Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette from the diskette drive until you see the following message displayed in a dialog box:

```
If you want to bypass the device configuration and boot screens when
the system reboots, eject the Device Configuration Assistant/Boot
diskette now
```

11. **Press Enter.**

    The Scanning Devices screen is displayed. System devices are scanned. When scanning is complete, the Identified Devices screen is displayed.

12. **Press F2_Continue.**

    The message "Loading driver `com.bef` ..." is displayed followed by messages about the drivers that are required to boot your system. After a few seconds, the Boot Solaris screen is displayed.

13. **At the Boot Solaris screen, select the device controller attached to the device that contains your install medium.**

14. **Press F2_Continue.**

Drivers for the device controller you selected are displayed. Your system boots to run the install program. The install program starts and your machine begins booting the complete Solaris 2.6 operating environment. Then, after some time, the following messages are displayed:

```
Installing unbundled device driver support
Extracting driver list from tree..
distribution-diskette-name driver-name...

Please insert the floppy labeled distribution-diskette-name
Press <ENTER> when ready.
```

15. **Remove Solaris 2.6 Device Configuration Assistant, Version 1.1 Diskette and reinsert Solaris 2.6 Driver Update 1 Diskette into the diskette drive.**

16. **Press Enter.**

    Patches that contain the new drivers are installed from the diskette onto your machine. Messages about the patches being installed are displayed. After a few minutes, this prompt is displayed:

```
If you have additional Update diskettes to install
(such as video), please insert diskette now.
Additional Update diskettes to install? (y/n) [y]
```

17. **If you want to install video drivers, remove Solaris 2.6 Driver Update 1 Diskette from the diskette drive, insert Solaris 2.6 Video Driver Update 1 Diskette, type** `y` **for yes or press Enter, and then follow the directions displayed on your screen.**

    Otherwise, type `n` **for no.**

18. **Press Enter.**

    The message “Installation complete” is displayed.

19. **Remove Solaris 2.6 Driver Update 1 Diskette from the diskette drive.**

20. **Reboot your machine.**

    When the Solaris operating environment is finished booting and running, the new devices whose drivers you installed are available for use.

Note - If you install a video device driver, you may need to run `kdmconfig` after your system reboots.

Adding New or Updated Drivers to an Existing Solaris System

Note - Before adding new drivers, the newly supported hardware devices should be installed and configured according to the instructions in the corresponding Device Reference Page, if any.

When the Solaris 2.6 *Intel Platform Edition* software is already installed, the simplest way to add new drivers is to install the Solaris 2.6 Driver Update 1 Diskette as a patch on your system.

Follow these procedures to install the new drivers:

1. **Become root.**
2. **Type** `ps -ef | grep vold` **to see if the Volume Management software is running on the machine you are updating.**

   For more information about managing diskettes and drives, see *System Administration Guide.*
3. **If Volume Management is running, temporarily stop it:**

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

4. **Insert Solaris 2.6 Driver Update 1 Diskette into the diskette drive.**
5. **Mount Solaris 2.6 Driver Update 1 Diskette at the** `/mnt` **mount point.**

```
# mount -F pcfs /dev/diskette /mnt
```

Note - You must mount Solaris 2.6 Driver Update 1 Diskette at this point in the file structure to update your system successfully.

6. **Execute the install script on the diskette by typing:**

```
# /mnt/DU/sol_26/i86pc/Tools/install.sh -i
```

   The `install.sh` script searches for all new drivers on the diskette. When a new driver is found, the following prompt is displayed:

```
Install patch driver-name? [y]
```

7. **If the driver is the one you want to install, at the prompt, type `y` for yes or press Enter. If the driver is not the one you want to install, type `n` for no.**

   If you specify yes, the `install.sh` script installs the driver you indicated.

8. **When you're done and the `install.sh` script exits, unmount the diskette by typing the following command at the system prompt:**

```
# umount /mnt
```

9. **Remove Solaris 2.6 Driver Update 1 Diskette from the diskette drive.**
10. **Halt your machine.**
11. **Turn your machine off.**
12. **If you haven't already, add the new hardware.**
13. **Turn your machine on.**
14. **When the autoboot sequence prompt is displayed, quickly press Escape.**

    The autoboot sequence is interrupted. The Solaris Device Configuration Assistant screen is displayed.

15. **Press F2_Continue.**

    The message "Enumerating buses ..." is displayed. The Scanning Devices screen is then displayed. System devices are scanned. When scanning is complete, the Identified Devices screen is displayed.

16. **Press F2_Continue.**

    The message "Loading driver `com.bef` ..." is displayed. The Boot Solaris screen is then displayed.

17. **On the Boot Solaris screen, select the device controller attached to the device that contains your install medium, in this case the main system disk.**

    The `/etc/bootrc` script is displayed.

18. **At the prompt, type `b -r`.**

    Your machine boots. You can now use your new hardware.

Configuring Cards for Your System

Avoiding Resource Conflicts

It is important that you configure your hardware according to the manufacturer's guidelines so, for example, there are no resource conflicts in IRQs or I/O address ranges.

Configuring your hardware is discussed further in the Configuring Devices module in *Information Library for Solaris 2.6 (Intel Platform Edition).*

Network Connectors and Supported Media

The Device Reference Pages specify the supported connector type where appropriate. All network devices are assumed to work at 10 Mbps only, unless otherwise specified in the Device Reference Pages. Following are network connectors and the media they support.

Connector	Supported Media	Comments	Speed
RJ-45	10BASE-T	Category-3 Twisted Pair cable	10 Mbps
RJ-45	100BASE-TX	Category-5 Twisted Pair cable	100 Mbps
BNC	10BASE2	Coax cable ("Thin" Ethernet cable)	10 Mbps
AUI	10BASE5	Shielded Twisted Pair ("Thick" Ethernet cable)	10 Mbps

100-Mbps Ethernet Performance Problem on Some Intel Motherboard Chipsets

Some PCI motherboards contain DMA chipsets that are unable to support 100-Mbps Fast Ethernet. Because of this problem, the Solaris operating environment does not support 100-Mbps PCI network operation on systems

containing the slow chipsets. This problem affects PCI cards only. Other buses are not affected.

The following chipsets are known to exhibit this problem:

- 82430LX (Mercury)
- 82450GX (Orion) (A and B steppings only)

The following chipsets do *not* exhibit this problem:

- 82430NX (Neptune)
- 82430FX (Triton)
- 82430HX (Triton II)
- 82440FX (Natoma)
- 82450GX (Orion) (C0 stepping and later)

Some slow PCI motherboard chipsets do not support long data burst DMA transfers and are unable to transfer data from PCI cards to system memory sufficiently fast to sustain 100-Mbps throughput. When systems with these chipsets are connected to a 100-Mbps network, data can arrive at a PCI Ethernet card faster than DMA can transfer it from the card to system memory. When this happens, the card's FIFO begins to fill. If this condition persists long enough, the card's FIFO will overflow, causing loss of incoming network data.

When incoming data is lost, higher-level protocols such as TCP or NFS™ will time out and retransmit the lost data. These protocols ensure that all data is transferred, but performance is lowered. If only a few packets are lost, the performance impact may be small or moderate, but if many packets are lost, a very substantial and severe performance loss can arise.

In some cases, a drop in network FTP performance of two orders of magnitude has been seen when using such chipsets, rendering the network unusable. This case occurs when using 100-Mbps cards containing relatively small FIFOs. The cards are designed to be able to hold only a couple of packets, and they depend on the DMA mechanism to transfer data out of the FIFO in a timely way.

In other cases, cards with larger FIFOs are not as severely impacted by the problem, and under normal conditions perform as well on machines with slow chipsets as they do on speedy ones. However, under sustained 100-Mbps operation, this cannot continue indefinitely.

Because of this problem, the Solaris environment does not support 100-Mbps PCI network operation on systems containing the slow chipsets.

In particular, the PCI cards supported by the `dnet`, `iprb`, and `elx` drivers will not provide good performance on machines with the problem chipsets. If 100-Mbps operation is required on such a machine, it is best to use a non-PCI Ethernet controller. It is also possible that the PCI cards supported

by the `ieef` driver, which have larger FIFOs, may function adequately. You must decide whether the performance on a particular machine is adequate for the intended purpose.