Chapter 4

Hardware notes

This chapter supplements the information in the *UnixWare 7 System Handbook* and on the SCO web site, to which you should also refer for information about hardware supported for UnixWare.

This chapter covers the following areas:

Supported hardware

To determine if your hardware is supported, please see the following *README* files on the UnixWare 7.0.1 Operating System Supplements CD-ROM:

/info/hardware/audio.txt	sound cards and other audio devices
/info/hardware/hba.txt	host bus adapters (HBAs)
/info/hardware/isdn.txt	ISDN adapters
/info/hardware/mp.txt	multiprocessor support modules
/info/hardware/nics.txt	network adapters
/info/hardware/xdrivers.txt	graphics adapters

For information on hardware that is newly supported in UnixWare 7.0.1, see the lists in Chapter 3, "Updating your system" (page 29).

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SCO is constantly adding support for additional hardware devices. Check the SCO Compatible Hardware Web Pages (*http://www.sco.com/chwp*) regularly to see if hardware not listed in these *Release Notes* or in the online *README*s is now supported.

Hardware compatibility issues

Except where noted, the hardware described in SCO documentation has been tested with UnixWare 7 systems. However, because the manufacturers of compatible machines or add-on peripherals may change configuration, functionality, or firmware at any time, no guarantee is implied.

To determine whether hardware components are compatible with your machine, you must know the processor (for example, 486 or Pentium) and the bus architecture (ISA, EISA, MCA and PCI) that it uses. You should also be aware of the type of disk controller in your system.

If you have added any adapters, make sure that all switches or software- controlled settings are set as recommended in the manufacturer's hardware manual for that board. Some computers require specific switches or software-controlled settings to run UnixWare systems. If your computer does not run the UnixWare system with the settings as shipped, contact your computer hardware representative for the proper settings.

UnixWare supports "versioning schemes" to allow the operating system to support a range of devices of a given type without mixing older and newer fixtures within the driver. This makes for more robust drivers and simplifies driver development and support. Versions are implemented for various driver configuration files documented in Section 4dsp manual pages to specify different formats for the file.

The principal versioning scheme is "driver interface versioning", which defines the set of interfaces used to code the driver. A driver's interface versions are set in the "$interface" field of the driver's *Master*(4dsp) file. This file should be supplied with the driver; current driver versioning has been implemented for all devices listed in "Supported hardware" (page 37). If your device is not listed, consult your hardware vendor for the most current driver interface version.

For example, DDI (Device Driver Interface) is the primary interface versioning scheme that is used for all kernel drivers. DDI8 is the newest interface version that is supported for UnixWare, but drivers written for DDI5 and later versions will run without modification on UnixWare. However, drivers written for DDI versions prior to version 8 do not support DDI8 features such as hotplug. Other interface versions include SDI for mass storage devices and MDI for network adapter cards.

NOTE Drivers written for DDI1 through 4 that ran on SCO UnixWare 2.0 do not run on UnixWare 7 unless they are modified to support a later DDI interface version. SCO UnixWare 2.0 network adapter card driver interfaces were not supported by a versioned interface; most of these drivers will run on UnixWare but they cannot be rebuilt and are unlikely to run on future versions of the operating system. SCO OpenServer drivers do not support DDI interface version and will not run on UnixWare.

For more information on interface versioning, see **Intro**(7).

Upgrading video adapters

UnixWare 7 supports a large number of video adapters including those supported under SCO UnixWare 2.X and SCO OpenServer Release 5. In addition, UnixWare 7 provides the **vesa** X server driver. This generic driver can operate any new video card that honors the VESA BIOS interface, and is useful in supplying high resolution support to video cards that do not have a specific accelerated driver. For more information on this feature, including performance implications, see the online documentation on your installed UnixWare 7 system.

Most video adapters are automatically configured when you install your UnixWare 7 system. However, you should record your video configuration from your previous operating system in case any of the following occurs:

- UnixWare 7 cannot automatically configure the adapter
- UnixWare 7 incorrectly configures the adapter
- you incorrectly configure the adapter manually and need to restore the default configuration

To manually configure a video adapter in UnixWare 7, use the SCOadmin **Video Configuration Manager**.

Upgrading SCO UnixWare 2.X video adapters

On your SCO UnixWare 2.X system, view or print the file */usr/X/defaults/Xwinconfig*. This file contains keyboard, video adapter, and monitor definitions. The important lines are shown here:

```
     chipset = GD54xx               # video chipset
       model = "GD54xx"             # the core drawing lib for this class
  vendor_lib = gd54xx_256.so.2      # chip specific drawing lib
virtual_size = 1024x768             # actual Frame Buffer size
      vendor = "Cirrus Logic - Generic"             # vendor name
```

From this information, you can determine that the configured video adapter is a Cirrus Logic GD54xx series model configured for 1024x768 mode.

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Record this information, then (if auto-detection or auto-configuration fails) use it to configure your adapter on UnixWare 7 using the SCOadmin **Video Configuration Manager**.

Upgrading SCO OpenServer Release 5 video adapters

To obtain information about the currently configured adapter, run the **Video Configuration Manager**.

The display at the top of the screen lists the name of the adapter, any configured monitor, and the resolution.

Record this information, then (if auto-detection or auto-configuration fails) use it to configure your adapter on UnixWare 7 using the SCOadmin **Video Configuration Manager**.

Troubleshooting video configuration

If you install your UnixWare 7 system and find that your video adapter is incorrectly configured, or you want to modify configuration, try the following.

To run your system in a safe video mode

Enter **/usr/bin/X11/setvideomode -stdvga**. This sets IBM VGA 640x480-16 mode, which is almost always safe for any adapter.

To restore the adapter's default configuration

Enter **/usr/bin/X11/setvideomode -default**.

Do this if initial auto-configuration worked well enough to get the video working, but you manually configured the adapter to a different setting and lost the use of the video adapter.

This **-default** option restores the settings to initial auto-configuration defaults.

To determine the video adapter in the system

Enter **/usr/bin/X11/VideoHelp**.

This command lets you know what video adapter is present on your system.

If the video Configuration Manager is run in the graphical environment, the configuration could be lost after a reboot. Change video modes only on virtual terminals in text mode.

Hardware configuration notes

The *UnixWare 7 System Handbook* contains details of hardware configuration.

Hardware limitations and workarounds

The following limitations and workarounds apply to hardware and device drivers in UnixWare:

Hot Plug PCI and replacement network adapters
If your system supports Hot Plug PCI, then a network adapter can be hot replaced, but the replacement adapter must be of an identical make and model to the original.

Device drivers not supported
The following device drivers are no longer supported:

- c7xx for Symbios Logic 53c7xx chipsets
- efp2 for the Olivetti SCSI host adapter
- fdeb for the Future Domain HBA
- ida for older discontinued Compaq host adapter models IDA, IDA-E and IDA-2
- mcis for SCSI host bus adapters
- wd7000 for MicroChannel Integral SCSI host bus adapters
- zl5380 for Trantor T160 host adapter and the SCSI interface provided by the Media Vision Pro Audio Spectrum 16 host adapter

DDI8 device files not deleted
DDI8 device files in */dev* are not deleted when a device is removed.

STREAMS module and driver in same code do not load
All drivers must have unique names, even in the case of a STREAMS module and a STREAMS device driver built together in one *Driver.o*. If such a combination STREAMS module/driver is also using a DDI version older than version 8, this failure will panic the system.

ds_qlen not set for CLARiiON arrays
The CLARiiON arrays on the Unisys XR6 do not report the instantaneous **qlength** (**ds_qlen** in *met_disk_stats*).

Error from sdipath

On a system with two qlc1020 adapters and two disks attached, when **sdipath**(1M) is used to fail or repair a path an error similar to the following may occur:

```
UX:sdipath: ERROR: Could not find path for disk2.
:4:Path path85 has been failed.
```

The command is completed successfully.

Hot swap on MPIO-based SCSI bus

It is not possible to hot-swap disks on an MPIO-based SCSI bus.

adsl driver may generate errors

The adsl driver may generate errors similar to the following on systems with multiple Adaptec adapters:

```
date system_name unx: WARNING: adsl: device queue full [810070311]
(ha/targetID/ lun 0/0/ 0)
date system_name unx: WARNING: DiskDriver: HA 0 TC 0 LU 0 -I/O Error
0x4DD13002
date system_name unx: WARNING: adsl: device queue full [810070311]
(ha/targetID/ lun 0/0/ 0)
date system_name unx: WARNING: DiskDriver: HA 0 TC 0 LU 0 -I/O Error
0x4DD13002
```

These may be ignored.

Dependencies of DDI8 drivers

DDI8 drivers may not have circular dependencies. **idbuild**(1M) will report non-DDI8 drivers which have circular dependencies, but these are acceptable.

System with MPIO cannot initialize multiple disks

On a system with an MPIO driver, you cannot initialize disks using the **Volume Manager**. (See "Initializing the Volume Manager" in *Online Data Manager overview and installation* for full details of initializing disks.)

To initialize multiple disks, turn the MPIO driver off, initialize the disks, then turn the MPIO driver back on.

c8xx controllers

adding the c8xx package to a system with no c8xx controller will panic the system on reboot. This occurs because the driver attempts to be loaded on reboot even though a controller does not exist. To prevent this occurrence, please make certain that a c8xx controller is present in the system when the package is installed.

Zyxel modem definition

When using the Zyxel modem, you should use the Hayes deinition rather than the autodetect mechanism.

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Tricom modem profile

Before you use the Tricom Tempest 34 Modem, edit the file */etc/uucp/default/Tricom_Tempest_34* to change the entry "MDM_SETUP=&K3\N3" to "MDM_SETUP=AT&K3\N3".

Connection server fails to return protocol information

The Connection server fails to return protocol information to an application when it is determined by class from the ISDN dialer.

Downloading firmware to qlogic adapter is slow

At bootup time, the qlc1020 driver may take several minutes to download firmware to the adapter.

Duplicate controller numbers

On Compaq systems with an IDE controller and with more than one Compaq HBA installed (either SCSI-2 using the cpqsc driver, or SMART arrays using the ida driver), it is possible to get duplicate controller numbers in the resource manager database. This will result in a message at boot time requesting that you press ⟨Esc⟩ to continue or ⟨Enter⟩ to rebuild the kernel. The rebuild will occur automatically if no key is pressed for 30 seconds. The system will reboot and as the duplicate controller numbers remain in the database the process will loop.

To recover from this reboot loop, press ⟨Esc⟩ to stop the kernel rebuild. After the system boots, run */sbin/dcu* to change the UNIT number of the IDE controller to something unused by any other HBA controller on the system. See **dcu**(1M) for instructions on how to run the DCU. You are likely to find that unit number 1 is not used by any other HBA controller. Be sure to save your changes when exiting the DCU. One additional reboot will be required so that the IDE driver will begin using the new UNIT number that you assigned using the DCU.

IEEE 1284 compliant printers

Some IEEE 1284 compliant printers do not operate correctly if the **SELECTIN** signal from the parallel port is asserted when printing.

There are four tunable parameters that control the behavior of **SELECTIN**. They are **LP0SELECT** through to **LP3SELECT**.

LP0SELECT indicates whether the **SELECTIN** signal on parallel printer port 0 should be asserted to select a printer. **LP1SELECT** through to **LP3SELECT** have the same purpose for ports 1 through 3.

If **SELECTIN** is to be asserted on port 0 while printing, set **LP0SELECT** to 1. Similarly for ports 1 through 3.

If **SELECTIN** is *not* to be asserted on port 0 while printing, set **LP0SELECT** to 0. Similarly for ports 1 through 3.

Note that many printers which are not IEEE 1284 compliant ignore the **SELECTIN** signal altogether, and so will be unaffected by the values to which these tunables are set.

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Selecting incorrect support modules

During installation, UnixWare 7 automatically detects the multiprocessor configuration of your system and recommends a selection if you choose to install the Multiprocessor support package. Most of today's systems comply with the Intel multiprocessor specification. In some cases, however, you need to select the vendor-specific multiprocessor support modules, which are listed on the multiprocessor selection page. Only if UnixWare cannot determine the appropriate multiprocessor support modules should you choose the selection by hand.

Choosing the wrong multiprocessor support modules, for example, choosing the Compaq modules for a Compaq Proliant 2500 system, is a common error, because the option Compaq Proliant 2000 indicates the specific model, not a family of systems. This will often result in a kernel that will not boot properly.

If you choose the incorrect support modules, interrupt the boot sequence, set **PSM=atup**, then, once the system has booted, use **pkgrm**(1M) to remove the **osmp** package and **pkgadd**(1M) to add the correct multiprocessor support modules.

Corrupt display on Intel M440LX DP system

On an Intel M440LX DP server board (such as the Micron NetFrame MVE5000) system with a Cirrus Logic 54M40 video chip on the motherboard using the native Cirrus Logic 54M40/30 driver, and the standard 0.5MB of video RAM, the SCOlogin screen is corrupt.

This is because the graphics driver requires at least 1MB of video RAM to operate. The graphics device can be operated in high resolution mode by selecting the VESA driver within the **Video Configuration Manager**. To do this, start the **Video Configuration Manager** and press **Modify**. If it then displays a short list of auto-detected adapters, press **Configure adapter not listed above...** to obtain a full list of all adapters. From the full list of adapters, near the bottom of the list, there will be an entry for "VESA (...adapter name...)". Choose this VESA entry.

Remapping bad blocks from SCO OpenServer

Remapping SCO OpenServer bad blocks may cause a panic with HBAs written to DDI 7.2.

See "Bad sector/track mapping" in the online documentation for information about remapping disks.

Stamps on converted SCO OpenServer disks

When **sdimkosr5**(1M) converts disks from SCO OpenServer Server systems to be used on UnixWare 7 systems, it does not assign valid disk stamps on the converted disks. As a result, the uninitialized disk stamps left on the converted disks may collide with stamps on other disks in MPIO configurations and cause data corruption.

Compaq LTE5280

On some newer laptop systems, the video drivers provided with UnixWare will fail to work properly. Contact your system vendor to ensure that you have the latest BIOS revision for your laptop.

MPIO with two adsl drivers

You cannot boot a system with MPIO installed that has two adsl 2944 drivers configured on the same SCSI bus. A panic may occur if you try to do this.

Storage Works RAID box

At runtime, the Storage Works RAID box is not visible to the qlogic driver.

Network adapters not suitable for network installation

Systems that have the following network adapters cannot be used to perform a network installation:

3Com 3C507 EtherLink 16 Series
3Com 3C523 EtherLink MC Series
Compaq NetFlex-1 ENET/TR (Board ID CPQ6100)
Compaq NetFlex-2 ENET/TR (Board ID CPQ6101)
Compaq NetFlex-2 TR (Board ID CPQ6002)
Compaq NetFlex-2 DualPort ENET (Board ID CPQ6200)
Compaq NetFlex-2 DualPort TR (Board ID CPQ6300)
Intel 2104x/2114x based 10/100 Mbps Ethernet Controllers
(Exceptions: SMC EtherPower 8432/8434 10 mbps PCI Ethernet Adapter, SMC EtherPower 9332DST/BDT/BVT 10/100 mbps PCI Adapter)

In addition, adapters newly supported in UnixWare 7.0.1 (as listed in Chapter 3 of this book) are not suitable for performing a network installation. This limitation will be removed at a later date.

Corrupted cursor

The cursor is corrupted on systems with the following graphics adapters that have more than 64MB of memory:

- Diamond Stealth 64 (Trio64)
- S3 86c764
- S3 86c732

To remedy this problem, for machines with more than 64MB but less than 2.5GB of memory, edit the *grafinfo* file as follows:

- Change each occurence of the following:

  ```
  MEMORY(0x4000000, 0x200000)
  ```

  to read:

  ```
  MEMORY(0xA0000000, 0x200000);   /* 2MB at 2.5GB */
  ```

This moves memory to the 2.5GB limit.

- Change each occurence of the following:

```
/* Set upper word of starting address: 0x4000000 (64 Mb) */
out(0x3d4, 0x59);
out(0x3d5, 0x04);       /* Upper byte 31:24 */
out(0x3d4, 0x5a);
out(0x3d5, 0x00);       /* lower byte 23:16 */
```

to read:

```
/* Set upper word of starting address: 0xA0000000 (2.5 Gb) */
out(0x3d4, 0x59);
out(0x3d5, 0xa0);       /* Upper byte 31:24 */
out(0x3d4, 0x5a);
out(0x3d5, 0x00);       /* lower byte 23:16 */
```

The following two lines are changed:

```
/* Set upper word of starting address: 0xA0000000 (2.5 Gb) */
out(0x3d5, 0xa0);       /* Upper byte 31:24 */
```

For machines with more than 4GB of memory, edit the *grafinfo* file as above, but instead of the fixed address of 0xA0000000, substitute the address assigned to the hardware by the PCI bus, which you can identify from the **Resource Manager**.

Display corruption

The **Video Configuration Manager** attempts to autodetect installed adapters whenever you use it to add or modify video configuration. When the manager is run in graphical mode, auto-detection might sometimes cause temporary corruption of your display. This condition is transient and benign, and it does not indicate problems with your video hardware or configuration.

Serial OSA

The serial OSA may take approximately five minutes to return information to managers and dialin services. Managers affected include:

- **Serial Manager**
- **Network Configuration Manager**
- **Modem Manager**

The following message may be displayed:

```
Determining configured serial ports
```

SMC9332DST adapter

The SMC9332DST adapter does not work on 10BaseT (10 Mbps) networks. The driver does not correctly detect media type for this model, though it does operate the SMC9332BDT correctly at 10Mbps. The SMC9332DST adapter functions correctly on 100BaseTX networks.

Matrox Mystique video driver

You cannot use the CDE desktop on a system that uses a Matrox Mystique video driver.

Removing modems using Network Configuration Manager

After adding a modem device using the **Network Configuration Manager**, the option to remove the configured device will not be selectable from within the **Network Configuration Manager**. The configured modem can be removed by using the **Modem Manager**.

Network Configuration Manager user

You must be *root* to run the **Network Configuration Manager**. It is not possible to run this manager as system owner.

Toshiba Laptop Computers

On many Toshiba laptop computers, the BIOS setup screen contains a configurable parameter for the Video Display Segment Address which defaults to “E400”. UnixWare 7 graphics modes will not function properly unless this parameter is set to “C000”.

If possible, set the parameter correctly before installation. If you do not do so, the auto-detection of the video display chipset may fail and you will need to reconfigure it by hand later.

If you have already installed UnixWare 7 on your laptop you will need to set the segment address correctly, then run the SCOadmin Video Manager to reset your display type.

Console multiscreens

In UnixWare 7, the default configuration of the console gives a similar look and feel to that of SCO OpenServer console multiscreens.

When the system enters multiuser mode, seven multiscreen text login prompts and one graphical login prompt are presented. The traditional SCO OpenServer screen switch sequences can be used to navigate among the multiscreens, with the following exceptions:

- The first multiscreen is reached be pressing ⟨Ctrl⟩⟨Alt⟩⟨Esc⟩, or alternatively ⟨Ctrl⟩⟨Alt⟩**h**, instead of ⟨Ctrl⟩⟨Alt⟩⟨F1⟩.
- The graphical login prompt is reached by pressing ⟨Ctrl⟩⟨Alt⟩⟨F1⟩.

All the traditional SCO UnixWare 1 and 2 screen switch sequences have also been preserved and can be used in conjunction with the newer UnixWare switch sequences. See the **keyboard**(7) manual page for further details of these. Users who prefer to use **vtlmgr**(1) and **newvt**(1) instead of multiscreens can still continue to do so. The default configuration described above uses virtual terminals 00 through 08. The first free virtual terminal available is therefore 09.

To return the console to the traditional SCO UnixWare configuration without text login prompts, run the following command:

sacadm -d -p contty

The login prompts can be subsequently re-enabled by running the following command:

sacadm -e -p contty

If you prefer to have eleven text login prompts as in SCO OpenServer, instead of the default seven, you can run the following script to enable the extra login prompts:

```
for i in 09 10 11 12
do
pmadm -a -p contty -s $i -S login -fu -v `ttyadm -V` \
-m "`ttyadm -d /dev/vt$i -l console -s /usr/bin/shserv \
-p \"Login (vt$i): \"`"
done
```

Note there must be no trailing spaces after the backslash (" \ ") characters at the ends of the third and fourth lines.

NOTE This script was incorrect in the previous version of these release notes. It is now correct.

For more information on using multiscreens see "Running programs simultaneously with multiscreen displays" in the online documentation. Note that the diagram in this section indicates that the first multiscreen is on ⟨Ctrl⟩⟨Alt⟩⟨F1⟩, when it is now on ⟨Ctrl⟩⟨Alt⟩⟨Esc⟩ as described above.