Solaris™ 2.4
x86 Video Driver Update 10 Guide

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Contents

About This Book

Solaris 2.4™ x86 Video Driver Update 10 marks the division of video support and support for other types of devices in driver updates. This document provides information about x86 video devices that are now supported on the Solaris 2.4 computing environment. Refer to *Solaris 2.4 x86 Driver Update 10 Guide* (supplied with Solaris 2.4 x86 Driver Update 10) for information about driver updates providing support for: SCSI host bus adapters, IDE interface, network adapters, PC Card (PCMCIA devices), audio, SCSI tape devices, and serial ports.

Typically, as new drivers become available, they will be bundled with releases on separate Video Driver Update diskettes. You can use the Video Driver Update diskettes to update your installed Solaris 2.4 system with new video drivers.

Note – Video Driver Updates are cumulative distributions. The "New Video Support" section in Chapter 1 describes what's been added since the last Video Driver Update, and the "Video Driver Update Contents" section in Chapter 2 provides a complete list of what will be installed. It is only necessary to install the current Video Driver Update to get the support described in this document.

Information regarding the availability of new drivers can be obtained by calling SunSoft's Automated Support System at 1-800-SUNSOFT (options 4,1,1) or by sending electronic mail to `support@cypress.West.Sun.COM`.

Before You Read This Book

This document contains additional device configuration information for newly supported hardware. The importance of properly configuring hardware prior to installing Solaris is discussed in *x86 Device Configuration Guide*. This document assumes you have fully read and understood that guide.

Note – Appendix A, "Device Reference Pages," in *Solaris 2.4 x86 Driver Update Guide* is an addendum to *x86 Device Configuration Guide* guide.

Likewise, the installation instructions for this Video Driver Update are very brief and serve only to supplement the instructions found in *x86: Installing Solaris Software*.

How This Book Is Organized

A description of the contents of the Video Driver Update diskettes is followed by installation instructions for the new drivers, known problems and bugs affecting this release, and an appendix providing supplementary information about the video support in this update.

Chapter 1, "What's New in Solaris 2.4 x86 Video Driver Update 10," provides information about what is new in this release.

Chapter 2, "Solaris 2.4 x86 Video Driver Update 10," provides information about the contents, installation instructions, and known problems in this Video Driver Update.

Appendix A, "Supplementary Video Information," provides additional information about the video support in this release.

Related Books

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

- *Solaris 2.4 x86 Driver Update Guide*
  Describes new support for SCSI host bus adapters, the IDE interface, network adapters, audio cards, and PC Card devices.

- *x86 Device Configuration Guide*
  Describes how to configure x86 devices before installing Solaris software.
- *x86: Installing Solaris Software*
  Describes how to install the Solaris software on x86 systems.
- *Solaris 2.4 Open Issues and Late-Breaking News*
  Describes late-breaking news about running Solaris software, including known problems with supported hardware or device drivers.
- *Solaris 2.4 x86 Hardware Compatibility List*
  Provides information about general x86 hardware requirements and the system platforms and peripherals supported in the Solaris 2.4 x86 computing environment.

How to Obtain Updated Hardware Compatibility Lists and Device Driver Information

Hardware Compatibility Lists and Driver Update releases (including related documentation) are produced periodically as support for new hardware becomes available. They are available from these sources:

- World Wide Web—Open URL `http://access1.Sun.COM`, and select "x86" and then "Solaris Intel (x86)."
- FTP—Use anonymous FTP to access `ftp.uu.net`, then go to `/vendor/sun/solaris/x86/2.4/`
- CompuServe—Type `go sunsoft` and go to the Solaris x86 library.

Note that the World Wide Web, CompuServe, and ASK-IT (below) also point to Support-provided installation and configuration information as well as answers to frequently asked questions.

Related Documentation Only

- Email Autoresponder—To obtain a Hardware Compatibility List or a Driver Update Announcement via email, send email to `hcl-index@Sun.COM` for a list of autoresponse aliases that return hardware support information.
- ASK-IT[1]—SunSoft's Automated Support Fax-on-Demand Service

1. Includes the current Hardware Compatibility List, document No. 51201, which summarizes the current x86 Driver Update, and document No. 81234, which lists *x86 Device Configuration Guide* Device Reference Pages so you can request those not available in x86 Driver Updates.

- In North America, call one of these numbers:
  1-800-SUNSOFT and choose options 4, 1, 1
  (310) 348-6219 and choose option 1
- Outside North America, call one of these numbers and choose option 1:

Australia	61-2-844-5374
Japan	03-5717-2560
Taiwan	886-2-719-8069
United Kingdom	44-1494-510981

How to Obtain Technical Support

To obtain technical support:

- In North America, call 1-800-SUNSOFT and choose option 4.
- Outside North America, contact your technical support provider.

What's New in Solaris 2.4 x86 Video Driver Update 10 1

Solaris 2.4 x86 Video Driver Update 10 adds new support for video display adapters. This chapter provides a brief description of what's new in this Video Driver Update.

A complete list of the contents, installation instructions, known problems, and release notes for all the video display support included in this release can be found in Chapter 2, "Solaris 2.4 x86 Video Driver Update 10."

New Video Support

Table 1-1 contains a list of the new video display adapters supported in Solaris 2.4 x86 Video Driver Update 10 that were not supported in previous Driver Updates.

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

				Resolution and Color Depth									
				800x600		1024x768		1152x900		1280x1024		1600x1200	
Vendor	**Model**	**Bus**	**Chipset**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**
Boca	Voyager 64	PCI	S3 Trio64	✓	✓	✓		✓		✓			
Compaq	ProSignia 300	—	Cirrus Logic 8424	✓									
STB	Powergraph 64 Video	PCI	S3 Trio64V+	✓	✓	✓		✓		✓			

For a complete list of video display adapters supported in this release, see Table 2-2 in Chapter 2, "Solaris 2.4 x86 Video Driver Update 10."

Updated Matrox Millenium Support

Matrox Millenium cards now work at all supported resolutions and color depths.

New Boca Voyager 64 Support

Video Driver Update 10 adds support for Boca Voyager 64 boards through the S3 Trio64 chipset.

Video Driver Update Diskettes

Solaris 2.4 x86 Video Driver Update 10 contains two diskettes labeled:

- "Solaris 2.4 x86 Driver Update 10 Video—1 Diskette"
- "Solaris 2.4 x86 Driver Update 10 Video—2 Diskette"

The diskettes are intended to be used with a Solaris 2.4 x86 CD or a Solaris 2.4 net install image, and can only be used on systems that already have Solaris 2.4 x86 installed.

The contents of the "Solaris 2.4 x86 Video Driver Update 10" diskettes are discussed in Chapter 2, "Solaris 2.4 x86 Video Driver Update 10."

Chapter 2 also contains a complete list of the video display adapters supported in this release.

Solaris 2.4 x86 Video Driver Update 10 2

This chapter contains a brief description of the support included in this Video Driver Update, followed by installation instructions and known problems. Appendix A, “Supplementary Video Information,” provides additional information about the video support in this release.

Read through the entire chapter once before installing Solaris 2.4 x86 Video Driver Update 10.

Video Driver Update Contents

Solaris 2.4 x86 Video Driver Update 10 contains two diskettes labeled: “Solaris 2.4 x86 Driver Update 10 Video—1 Diskette” and “Solaris 2.4 x86 Driver Update 10 Video—2 Diskette.” The diskettes are intended to be used on Solaris 2.4 x86 systems only. Table 2-1 contains a list of video display adapters supported in this Video Driver Update. While this table includes the resolution and color depth capabilities of each adapter, it is important to note that the resolution and color depth you select are also dependent on the capabilities of your monitor and the amount of video memory on the card. See “Determining Resolution and Color Depth” in Appendix A for more information.

Note – In order to get support for the Diamond Viper VLB and Diamond Viper PCI cards, you must install the Driver Update Distribution as described in *Solaris 2.4 x86 Driver Update 10 Guide* before installing the Video Driver Update.

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

				Resolution and Color Depth									
				800x600		1024x768		1152x900		1280x1024		1600x1200	
Vendor	**Model**	**Bus**	**Chipset**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**
Acer	ET4000/W32[1]	ISA	ET4000/W32	✓		✓							
AST	Manhattan 5090P[2]	—	Cirrus Logic 5424	✓									
ATI	Graphics Pro Turbo[3]	PCI	ATI Mach64	✓	✓	✓	✓	✓		✓			
	Graphics Pro Turbo[3]	VLB	ATI Mach64	✓	✓	✓	✓	✓		✓			
	Graphics Ultra+	ISA	ATI Mach32	✓		✓							
	Graphics Ultra PRO	ISA	ATI Mach32	✓		✓		✓		✓			
	Graphics Ultra PRO	PCI	ATI Mach32	✓		✓		✓		✓			
	Graphics Ultra PRO	VLB	ATI Mach32	✓		✓		✓		✓			
	Graphics Xpression[3]	PCI	ATI Mach64	✓	✓	✓		✓		✓			
	Graphics Xpression[3]	VLB	ATI Mach64	✓	✓	✓		✓		✓			
	Winturbo[3, 4]	PCI	ATI Mach64	✓	✓	✓		✓		✓			
	Mach64 chipset[3]		ATI Mach64	✓		✓							
	Mach64CT chipset	PCI	Mach64CT	✓	✓	✓		✓		✓			
	Mach64CT chipset Rev.2	PCI	Mach64CT	✓	✓	✓		✓		✓			
Boca	Voyager 64[5]	PCI	S3 Trio64	✓	✓	✓		✓		✓			
Cirrus Logic	5420 chipset w/512Kbyte DRAM			✓									
	5424 chipset w/512Kbyte DRAM[2]			✓									
	5428 chipset w/512Kbyte VRAM			✓									
	5430 chipset			✓	✓	✓		✓		✓			
	5434 chipset			✓	✓	✓	✓	✓		✓			
Compaq	QVision 1024	EISA	TRITON			✓							
	QVision 1280 chipset[6]	EISA	ORION	✓	✓	✓		✓		✓			
	QVision 2000	PCI	Matrox MGA-2	✓	✓	✓		✓		✓			
	QVision 2000 (Rev. G)	PCI	Matrox MGA-3	✓	✓	✓		✓		✓			
	ProLiant	—	Cirrus Logic 5420	✓									
	ProSignia	—	Cirrus Logic 5420	✓									
	ProSignia 300	—	Cirrus Logic 8424	✓									

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

				Resolution and Color Depth									
				800x600		**1024x768**		**1152x900**		**1280x1024**		**1600x1200**	
Vendor	**Model**	**Bus**	**Chipset**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**	**8**	**24**
DEC	DECpc XL 590	—	Cirrus Logic 5428	✓									
Dell	OptiPlex DGX 590	—	ATI Mach64	✓	✓	✓		✓		✓			
	OptiPlex XMT 590	—	S3 Vision 864	✓	✓	✓		✓		✓			
	Poweredge SP5*xx*	—	ATI Mach32			✓							
Diamond	SpeedStar 64 ISA	ISA	Cirrus Logic 5434	✓	✓	✓		✓		✓			
	SpeedStar 64 PCI	PCI	Cirrus Logic 5434	✓	✓	✓		✓		✓			
	Stealth 32	PCI	Tseng Labs W32p	✓	✓	✓		✓		✓			
	Stealth 32	VLB	Tseng Labs W32p	✓	✓	✓		✓		✓			
	Stealth 64 DRAM	PCI	S3 Trio64	✓	✓	✓		✓		✓			
	Stealth 64 DRAM	PCI	S3 Vision 864	✓	✓	✓		✓		✓			
	Stealth 64 DRAM	VLB	S3 Vision 864	✓	✓	✓		✓		✓			
	Stealth 64 VRAM	PCI	S3 Vision 964	✓	✓	✓	✓	✓	✓	✓			
	Stealth 64 VRAM	VLB	S3 Vision 964	✓	✓	✓	✓	✓	✓	✓			
	Stealth Video DRAM	PCI	S3 Vision 868	✓	✓	✓		✓		✓		✓	
	Stealth Video VRAM	PCI	S3 Vision 968	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Stealth64 Video 2000	PCI	S3 Vision 868	✓	✓	✓		✓		✓			
	Stealth64 Video 2001	PCI	S3 Vision 765	✓	✓	✓		✓		✓			
	Stealth64 Video 3000	PCI	S3 Vision 968	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	Viper Pro	PCI	Weitek Power 9100	✓	✓	✓	✓	✓		✓		✓	
	Viper Pro	VLB	Weitek Power 9100	✓	✓	✓	✓	✓		✓		✓	
	Viper SE[7]	PCI	Weitek Power 9100	✓		✓		✓		✓			
	Viper VLB	VLB	Weitek Power 9000	✓		✓		✓		✓			
	Viper PCI	PCI	Weitek Power 9000	✓		✓		✓		✓			
ELSA	Winner 1000	VLB	S3 928	✓		✓		✓					
	Winner 2000	VLB	S3 928	✓		✓		✓		✓			
	Winner 1000Pro-VL[8]	VLB	S3 Vision 864	✓	✓	✓		✓		✓			
	Winner 2000Pro-VL	VLB	S3 Vision 964	✓	✓	✓	✓	✓	✓	✓		✓	
	Winner 2000Pro-PCI	PCI	S3 Vision 964	✓	✓	✓	✓	✓	✓	✓		✓	
Everex	FIC 864P	PCI	S3 Vision 864	✓	✓	✓		✓		✓			

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

Vendor	Model	Bus	Chipset	Resolution and Color Depth									
				800x600		1024x768		1152x900		1280x1024		1600x1200	
				8	24	8	24	8	24	8	24	8	24
Everex, cont.	VGA Trio 64P	PCI	S3 Trio64	✓	✓	✓		✓		✓			
	ViewPoint 64P	PCI	S3 Vision 864	✓	✓	✓		✓		✓			
Hewlett-Packard	HP NetServer LC/LE/LF	—	TVGA 9000i	✓									
	HP Vectra VL2	—	Cirrus Logic 5428	✓		✓							
	HP Vectra XM2i	—	S3 Vision 864	✓		✓		✓					
	HP Vectra XU[9]	—	S3 Vision 864	✓	✓	✓		✓		✓			
IBM	PC Series 300-486	—	Cirrus Logic 5430	✓		✓							
	PC Series 300	—	S3 Vision 864	✓	✓	✓		✓		✓			
	PC Series 700	—	S3 Vision 864	✓	✓	✓		✓		✓			
	PS/ValuePoint Performance Series	—	S3 Vision 864	✓	✓	✓		✓		✓			
Intel	Professional/GX High Resolution	—	ATI Mach32	✓	✓	✓		✓		✓			
Intergraph	TD-1[10]	—	S3 928	✓		✓		✓		✓			
	TD-2, TD-3; (G90)[11]	PCI	Weitek Power 9000	✓		✓		✓		✓			
	G91[12]	PCI	Weitek Power 9100	✓		✓		✓		✓		✓	
Matrox	MGA Impression	VLB	Matrox MGA-1	✓	✓	✓	✓	✓		✓			
	MGA Impression Plus	PCI	Matrox MGA-3	✓		✓		✓		✓			
	MGA Millenium	PCI	STORM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	MGA Ultima	VLB	Matrox MGA-2	✓	✓	✓		✓		✓			
	MGA Ultima Plus	PCI	Matrox MGA-2	✓	✓	✓		✓		✓		✓	
	MGA Ultima Plus 200	PCI	Matrox MGA-2	✓	✓	✓	✓	✓	✓	✓		✓	
Micronics	Mpower 4 plus	—	ATI Mach64	✓		✓							
Miro	miroCRYSTAL 20SD	PCI	S3 864, S3 SDAC	✓	✓	✓		✓		✓			
	miroCRYSTAL 20SD	PCI	S3 Vision 864	✓	✓	✓		✓		✓			
	miroCRYSTAL 40SV	PCI	S3 Vision 964	✓	✓	✓	✓	✓	✓	✓			
Nanao	EizoAccel AA51	ISA	F82C480			✓				✓			
	Nanao HA50/HL50	ISA	S3 928			✓				✓		✓	
	Nanao HA60	ISA	S3 928			✓				✓		✓	

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

				Resolution and Color Depth									
				800x600		1024x768		1152x900		1280x1024		1600x1200	
Vendor	**Model**	**Bus**	**Chipset**	8	24	8	24	8	24	8	24	8	24
Number Nine	9FX Motion 531	PCI	S3 Vision 868	✓	✓			✓		✓			
	9FX Motion 771	PCI	S3 Vision 968	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	#9GXE[13]	ISA	S3 928	✓		✓		✓		✓			
	#9GXE[13]	VLB	S3 928	✓		✓		✓		✓			
	#9GXE64	PCI	S3 Trio64	✓	✓	✓		✓		✓			
	#9GXE64	PCI	S3 Vision 864	✓	✓	✓		✓		✓		✓	
	#9GXE64 Pro	PCI	S3 Vision 964	✓	✓	✓	✓	✓	✓	✓		✓	
	Imagine 128	PCI	Imagine128	✓	✓	✓	✓	✓	✓	✓		✓	
Oak Technology	OTI107	PCI	OTI107	✓	✓	✓		✓		✓			
Orchid	Fahrenheit 1280 Plus VL	VLB	S3 801	✓		✓							
	Kelvin 64	PCI	Cirrus Logic 5434	✓	✓	✓		✓		✓			
	Kelvin 64[14]	VLB	Cirrus Logic 5434	✓	✓	✓		✓		✓			
S3	Trio64V+ chipset		S3 Vision 765	✓	✓	✓		✓		✓			
	Vision 864+SDAC chipset			✓	✓	✓		✓		✓			
SPEA	V7-Mirage P-64	PCI	S3 Vision 868	✓	✓	✓		✓		✓			
STB	Lightspeed VL	VLB	Tseng Labs W32p	✓	✓	✓		✓		✓			
	Nitro PCI	PCI	Cirrus Logic 5434	✓	✓	✓	✓	✓		✓			
	Powergraph 64	PCI	S3 Trio64	✓	✓	✓		✓		✓			
	Powergraph 64 Video	PCI	S3 Trio64V+	✓	✓	✓		✓		✓			
	Ppwergraph Pro PCI	PCI	S3 Vision 864	✓	✓	✓		✓		✓			
	Velocity 64V	PCI	S3 Vision 968	✓	✓	✓	✓	✓	✓	✓		✓	
Toshiba	J3100	—	Western Digital 90C31A	✓		✓							
Trident	TVGA 9000i	—	TVGA 9000i	✓									

1. The ET4000/W32 video cards that are shipped with Acer machines are not all the same; if you encounter any display problems when the OpenWindows environment is running, try using a different add-on board that is compatible with the Solaris operating environment.
2. Video adapters based on the Cirrus Logic 5424 chipset with 512-Kbyte DRAM may not perform well in 800x600x256 mode, particularly if the selected monitor refresh rate is 60 Hz or higher. See "Video Driver Update Release Notes" later in this chapter.
3. Support is provided for ATI cards with Mach64 chips and the following RAMDACs: ATT68860, ATT20C408, ATT20C491, ATT20C498, and STG1702.
4. The ATI WINTURBO model is equivalent to the Gateway ATI GX Mach64 PCI video card.

5. To support the Boca Voyager 64, select the graphics card "Trio64 (2 MB)" when configuring the Solaris window system.
6. Used on Compaq QVision 1280/E Graphics Controller and in Compaq Deskpro 590.
7. The Diamond Viper SE is currently only supported with a 64-kHz refresh rate in the 1280x1024 resolution. See " Known Problems "(1200858) later in this chapter.
8. The ELSA Winner 1000Pro with the ATT20C498 RAMDAC is supported.
9. Both the STG1702 and the ATT21C498 RAMDACs are supported.
10. 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. Choose "Multifrequency 56KHz (up to 1280x1024 interlaced)" as the monitor type. See "Installing the Video Driver Update" later in this chapter for information about configuring the window system.
11. The Intergraph G90 is synonymous with the Diamond Viper video card based on the Weitek Power 9000 (P9000) chipset. When configuring an Intergraph Personal Workstation with a G90, select one of the Diamond Viper entries listed by the `kdmconfig` program that includes the monitor type. Be sure to read the notes in this chapter that pertain to the P9000-based Diamond Viper video cards.
12. The Intergraph G91 also supports a resolution of 1600x1280 for 8-bit color.
13. The Number Nine #9GXE video display adapters (ISA and VESA local bus) support 24-bit color in 640x480 mode *only*.
14. Older versions of the Orchid Kelvin64 VLB card have memory addressing limitations that may cause problems if your system contains 32 Mbytes or more of RAM. See "Known Problems" for further information.

"—" in the Bus column indicates a video controller model that is used on video display adapters and motherboards.

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

Table 2-2 Additional Video Support for Notebook Displays in This Video Driver Update

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

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

Video Driver Update Release Notes

- 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 diskettes.
- Support for LCD monochrome, LCD VGA, and LCD Super VGA notebook monitor types has been added.
- Support for NEC 5FGe and NEC 6FGp monitors has been added.
- Support for 85-kHz refresh rate has been added; before Driver Update 7, 80 kHz was the maximum refresh rate supported.
- Support for panning has been added on the NEC Versa M75C, NEC Versa M75HC, and Toshiba 4900CT notebook computers in 8-bit mode. Before Driver Update 7, 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, particularly if the selected monitor refresh rate is 60 Hz or higher. This is a hardware limitation. To obtain the best performance in 800x600x256 mode, choose the "Multifrequency—38kHz" monitor type when configuring the window system.
- If your video adapter contains the S3 Vision 864 chip, but is not in the list of supported adapters, it may work with one of the "S3 Vision864" entries listed by the `kdmconfig` program.
- If your video adapter contains the S3 Vision 864 video chip with S3 SDAC, but is not in the list of supported adapters, it may work with one of the "S3 Vision864 with S3 SDAC" entries listed by the `kdmconfig` program.

- If your video adapter contains the Trident TVGA 9000i chip, it may work with the “Trident TVGA9000i(512k)” entry listed by the `kdmconfig` program.
- New software in this Video Driver Update replaces the support for the Number Nine #9GXE ISA and VLB display adapters included in the Solaris 2.4 release. If you have one of these video boards, you will need to reconfigure your window system as described in “Installing the Video Driver Update.”
- This Video Driver Update adds new software support for the following display adapters that were supported in the Solaris 2.4 release:
  ATI Graphics Ultra+ ISA
  ATI Graphics Ultra PRO (ISA, PCI, and VLB)
  If you have one of these video boards, and you want to use the new software support, reconfigure your window system as described in “Installing the Video Driver Update.” The `kdmconfig` program now has specific entries for these cards that you can select. (Prior to this Video Driver Update, you had to select one of the “ATI 68800” entries in order to use one of these cards.)
- This Video Driver Update also includes software fixes to some known problems. For a list of the known problems fixed in Video Driver Update 10, see the `README` files in the directories: `/var/sadm/patch/102058-10` and `/var/sadm/patch/102059-10`.

Solaris 2.4 x86 Jumbo Kernel Patch

To avoid user-level program core dumps after installing the Solaris 2.4 x86 Video Driver Update 10 Video, it is recommended that you install the latest revision of the Solaris 2.4 x86 jumbo kernel patch ID `101946`. See “Solaris 2.4 x86 Jumbo Kernel Patch” in *Solaris 2.4 x86 Driver Update 10 Guide* for information on how to obtain this patch.

Installing the Video Driver Update

Note – In order to get support for the Diamond Viper VLB and Diamond Viper PCI cards, you must install the Driver Update Distribution as described in *Solaris 2.4 x86 Driver Update 10 Guide* before installing the Video Driver Update.

The contents of the Video Driver Update diskettes are installed as patches on your Solaris 2.4 x86 system. To do this, you must already have Solaris 2.4 installed and running on your x86 system.

Note – When installing the Solaris 2.4 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 Video Driver Update software, the installation script will give you the option of configuring the window system by running the `kdmconfig` program. If you choose to do this, you will be asked to configure your keyboard, mouse, and video card again; however, this time you will be able to select from a list that includes the newly supported video cards.

1. Become root.

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

See "How to Obtain Updated Hardware Compatibility Lists and Device Driver Information" in "About This Book" for information on obtaining Video Driver Updates from on-line sources.

2. Insert "Solaris 2.4 x86 Driver Update 10 Video—1 Diskette" into drive 0.

3. Use `cpio` to copy the compressed `cpio` image file off the diskettes.
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 should 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 *Solaris 2.4 Open Issues and Late-Breaking News*.

```
# mkdir /tmp/Drivers
# cd /tmp/Drivers
# volcheck &
# cpio -iduBI /vol/dev/diskette0/unlabeled

  End of Medium on "input"
  Change to part 2 and press RETURN key [q]
```

4. **Insert the second Video Driver Update diskette into the drive and press Enter.**
   `cpio` will report the number of blocks copied.

5. **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 `vdu?image.Z`, where *?* represents the Video Driver Update number.

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

6. **Configure the window system.**
   After the Video Driver Update 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
```

Note – If you have one of the Number Nine #9GXE video cards installed and running on your Solaris 2.4 system, and you want to use the new software included in this Video Driver Update to support it, you must configure the window system at this time. If for some reason you do not want to use the new Number Nine #9GXE video support in this Video Driver Update, you must back out the Video Driver Update patches. See the `README` files in `/var/sadm/patch/102058-10` and `/var/sadm/patch/102059-10` for instructions on how to back out these patches.

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 letter of the vendor name. For example, type “M” to get to the first Matrox MGA 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.

Note – To choose one of the Diamond Viper video card entries displayed by `kdmconfig`, you will need to select an entry that matches your monitor. For a complete list of supported monitors, see "Supported Diamond Viper (P9000) Monitor Configurations" in Appendix A.

Note – To choose the Intergraph G91 entry displayed by `kdmconfig`, you will need to select an entry that matches your monitor. For a list of supported monitors, see "Supported Intergraph G91 Monitor Configurations" in Appendix A.

After you have selected your display adapter, you may be asked additional questions about screen size, color depth, display resolution, and monitor type.

7. **If prompted for this information, 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
```

- If your system contains a Diamond Viper Pro VLB card, there may be an additional step you must take if the system hangs after starting the OpenWindows software. See problem number 1192967 under “Known Problems.”
- If your system does not have a Diamond Viper Pro VLB card, the installation of the Video Driver Update 10 is complete and you can now run the `openwin` command to start the window system.

Note – Be sure to read “Known Problems” at the end of this chapter, if you have not already done so.

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`**.**

- If you have a Toshiba 4900CT notebook computer, type:

```
# cp /usr/openwin/server/etc/OWconfig.4900ct OWconfig
```

- If you have an NEC Versa M75C, type:

```
# cp /usr/openwin/server/etc/OWconfig.vm75c OWconfig
```

- 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 OpenWindows environment.

4. **Exit from superuser status.**

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

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

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

For more information about notebook computer configuration, see *Solaris 2.4 Notebook Supplement Guide* (part number 801-6619-14).

Known Problems

Caution – (1161494) Under the Solaris operating environment, the Diamond Viper video card based on the P9000 chipset is not compatible with a motherboard that has a Symphony chipset. This combination may cause the system to panic or reboot. If the Symphony chipset is present on the motherboard, do not use the Diamond Viper video card..

Note that the VLB version of the Diamond Viper SE adapter is not supported in this release.

- The VLB versions of the Diamond Viper and Diamond Viper Pro adapters do not work on some systems that have both PCI and VESA local bus support on the motherboard. The OpenWindows software will fail with an error message when you attempt to start it. The Solaris software expects a PCI version of the Diamond Viper boards if the system supports PCI. *Workaround*: Use a PCI version of the Diamond Viper adapters on those systems that support both bus types.

- **(1210745)** The Matrox MGA Impression (VLB) video card does not support 1600x1200 resolution in the current release.
- **(1211083)** Iconifying and deiconifying windows sometimes leaves extended lines on the screen when a Number Nine Imagine 128 video card is installed.
  Workaround: Refresh the screen when this happens.
- **(1192967)** Due to hardware conflicts on some VESA local bus (VLB) systems, the Diamond Viper Pro VLB card may not function when configured at the default memory address (`0xa0000000`). If your system appears hung with a blank screen after starting the OpenWindows software, you will need to do the following:

  a. **Reboot your system.**

  b. **Edit the file** `/etc/openwin/server/etc/OWconfig` **using a text editor such as** `vi`**.**

  c. **Change the address on the line that contains "XSCREENCONFIG" from** `0xa0000000` **to** `0xc0000000`**. Here is a sample line:**

Look for this line

```
class=”XSCREENCONFIG” name=”p9100-vlb” device=”SUNWp9100”
res=”1024x768” defdepth=”8” size=”15-inch” addr=”0xa0000000”
board=”diamond2/p9100-vlb.xqa” monitor=”mfreq/mfreq64.vda”
dpix=”85” dpiy=”85”;
```

Change this field

  d. **Save your changes and exit the editor.**

  e. **Restart the OpenWindows software.**

  In future releases, changes of this kind will be handled by the `kdmconfig` program.

- **(1200858)** The Diamond Viper SE adapter will not run with a refresh rate above 75 kHz in 1280x1024 resolution. (See the manufacturer's manual to verify the maximum horizontal sync rates.) In the current release, however, it also does not work with a refresh rate of 56 kHz in 1280x1024 resolution.
  Workaround: Use a refresh rate of 64 kHz with 1280x1024 resolution.

- Some VESA local bus motherboards do not properly support the default address range used by the Diamond Viper VLB adapter. Finding a workable address for a particular system may require some experimentation.
- **(1193138)** On systems with the QVision 1024/E video card installed, black lines may appear along a client's title bar every time it gets input focus. The symptoms occur if `olwm` is the window manager and the `OpenWindows.SetInput` resource is set to "followmouse" in either the `.Xdefaults` or `.OWdefaults` file. Performing a refresh operation only temporarily causes the black bars to disappear.
  Workaround: Set the input focus to be "Click to Type" so that the `OpenWindows.SetInput` resource is changed from "followmouse" to "select." This can be done through the Workspace Properties menu. Go to the Miscellaneous category and change the Set Active Window property to "Click Mouse" instead of "Move Pointer."
- **(1179339)** The ATI Graphics Ultra PRO VLB video card with a Mach32 graphics chip, a TI68875 BFN RAMDAC, and 2 Mbytes of DRAM may not work properly if the "ATI Graphics Ultra Pro (2MB)" entry is selected when configuring the window system. Vertical bars get displayed on the screen.
  Workaround: If you have this version of the card, choose the "ATI Graphics Ultra Pro (1MB)" entry when configuring the window system but note that you will not be able to use a resolution of 1280x1024. Note also that the ATI Graphics Ultra PRO VLB video card with VRAM does not have this problem.
- **(1179340)** Using the Intel® Professional GX High Resolution system in 1280x1024 with 256 colors mode and an 80-kHz monitor causes problems when returning to text mode after exiting the OpenWindows environment. The foreground color is set to purple, and the background color is set to blue.
  Workaround: Select either a different resolution or a different monitor frequency when configuring the window system.
- **(1178899)** On systems with video cards that use a hardware cursor, only one icon is shown when selecting multiple icons to drag and drop. This problem may be seen on video cards that contain the following chipsets: Imagine128, S3 864, S3 964, ATI Mach64, ATI Mach32, Matrox MGA-1, and Matrox MGA-2. (See Table 2-1 for the make and models of video cards associated with these chipsets.) Even though the multiple icons are not shown while being dragged and dropped, they are being selected and will be copied correctly.

- **(1176285)** Programs that use the Solaris™ PEX™ extension may fail if a user’s `XGLHOME` variable is set incorrectly. If the `XGLHOME` shell environment variable points to a nonexistent path (or one that doesn’t contain the XGL™ runtime binaries), then any program that uses the Solaris PEX extension (including XGL programs on most display adapters) will cause the server to abort.
  Workaround: Users should be careful when setting `XGLHOME` prior to starting the OpenWindows environment. Prior to running the `openwin` command, make sure your `XGLHOME` environment variable is either not set or points to a valid path for the system you are using.
- Some versions of the Orchid Kelvin 64 VLB video card have memory addressing limitations that may cause problems if your system contains 32 Mbytes or more of RAM. A newer revision of this board addresses these problems. Unfortunately, there is no distinction made between revisions of this card. If your system has 32 Mbytes or more of RAM and you observe symptoms such as a fuzzy display or random vertical lines in the OpenWindows environment, contact Orchid Technology to request a newer version of this card.
- The Number Nine Imagine 128, the #9GXE64, and #9GXE64 Pro video cards do not support interlaced mode. Configuring the window system using a monitor type of “MultiFrequency-38kHz (up to 1024x768 interlaced)” or “MultiFrequency-56kHz (up to 1280x1024 interlaced)” will cause the window system to fail.
  Workaround: Use a monitor that can support 1024x768 or 1280x1024 in non-interlaced mode.
- **(1173773)** After running `xlock`, there may be a white border around the screen on systems with video cards that use the Tseng Labs W32p chipset (see Table 2-1). This border disappears after the screen is unlocked.
- **(1200644)** When using an LCD screen at a resolution of 800x600, in 256 color mode, sometimes the image in the upper left portion of the screen will expand to fill the entire screen.
  Workaround: Use the keys Fn-LCD/CRT three times to adjust the size and position of the screen.

The following problems apply only to 24-bit depth color:

- **(1172443)** Applications that use the XIL™ runtime environment display the wrong colors when used with a 24-bit display adapter. Image Tool is an example of such an application. The problem is that XIL does not handle the

byte ordering of 24-bit displays correctly; thus the colors are wrong in the displayed image.
Workaround: Use an application that does not use XIL but that can display 24-bit images correctly. `xv` is an example of a shareware application that is available over the Internet.

Note – 8-bit displays are not affected by this problem, and Image Tool works correctly with PostScript™ files on any display depth.

- **(1173985)** Icon Editor dies when saving a 24-bit image to a file.
- **(1174561)** The STB Lightspeed VL video card used in 800x600 resolution, 24-bit color mode does not work properly with the Sony CPD 1604S monitor.
  Workaround: Do not use this particular monitor type at that resolution and color depth.
- Wabi™ will not run under 24-bit depth mode.
- The IslandPaint application does not work properly under 24-bit mode. All of the button icons on the left side of the window are either missing images or display incorrect ones.

Supplementary Video Information A

This appendix includes supplementary information about the video support provided in this Video Driver Update.

Determining Resolution and Color Depth

The resolution and pixel color depth supported by video display adapters is dependent on the amount of video memory on the card. Table A-1 shows the minimum amount of video memory that is needed to support the resolutions and pixel color depth shown. This should only be used as a general reference, however, as the modes supported by your card may differ. Check the documentation that comes with your video card and monitor for the specific modes supported.

Table A-1 Minimum Memory Requirements to Support 8-Bit and 24-Bit Color Depth

	Color Depth	
Resolution	**8-Bit**	**24-Bit**
640x480	1 Mbyte	2 Mbytes
800x600	1 Mbyte	2 Mbytes
1024x768	1 Mbyte	3 Mbytes
1152x900	1 Mbyte	4 Mbytes
1280x1024	2 Mbytes	5 Mbytes
1600x1200	2 Mbytes	8 Mbytes

Supported Diamond Viper (P9000) Monitor Configurations

Table A-2 lists the monitors that can be used with the Diamond Viper graphics cards based on the Weitek Power 9000 (P9000) chipset supported in this Video Driver Update. When configuring the video adapter (`kdmconfig`), select only resolutions and frequencies that are supported by your monitor. If your monitor is not listed, you may be able to select a supported one that has the same resolution and synchronization rates as yours. In the following table, only the maximum resolution and horizontal and vertical frequencies supported by the monitor are listed. The `kdmconfig` program will display the lower resolutions supported by the monitor.

Table A-2 Supported Monitors With the P9000-Based Diamond Viper Graphics Card

Monitor	Maximum Resolution	Hfreq (kHz)	Vfreq (Hz)
CS1024	800x600	35.4	56.1
CS1024ni	1024x768	48.4	60.0
CS1572 FS	1280x1024	64.4	60.2
CTX 5468NI	1024x768	48.4	60.0
Fixed Frequency	800x600	35.4	56.1
HL 6955 SETK	1280x1024	64.4	60.2
IBM 8514	800x600	35.4	56.1
IBM 9515	1024x768	61.2	75.8
IBM 9517	1024x768	58.1	72.1
InterVue 20	1280x1024	81.2	76.0
MAG 17F	1152x900	56.8	60.3
NCR 3298-0240/0241	1024x768	48.4	60.0
NCR 3298-0261	1024x768	56.5	70.1
NCR 3298-0271/0272	1024x768	56.5	70.1
NEC 3FG	1024x768	48.4	60.0
NEC 3FGe	1024x768	48.4	60.0
NEC 3FGx	1024x768	48.4	60.0
NEC 4FG	1152x900	56.8	60.3
NEC 4FGe/5FGe	1152x900	56.8	60.3
NEC 5FG	1280x1024	64.4	60.2
NEC 6FG	1280x1024	78.9	74.0

Table A-2 Supported Monitors With the P9000-Based Diamond Viper Graphics Card

Monitor	Maximum Resolution	Hfreq (kHz)	Vfreq (Hz)
Nanao 9070u	1024x768	48.4	60.0
Nanao 9080i	1152x900	56.8	60.3
Nanao 9500	1152x900	56.8	60.3
Nanao T550i	1280x1024	64.4	60.2
Nanao T560i	1152x900	56.8	60.3
PS/V 2414-A04	1024x768	56.5	70.1
PS/V 2414-A07	1024x768	58.1	72.1
SONY 1304	1024x768	48.4	60.0
SONY 1304S	1152x900	56.8	60.3
SONY 1604S	1152x900	56.8	60.3
ViewSonic 6	1024x768	48.4	60.0
ViewSonic 7	1152x900	56.8	60.3

Supported Intergraph G91 Monitor Configurations

Table A-3 lists the supported Intergraph G91 monitor configurations in this Video Driver Update. When configuring the video adapter (`kdmconfig`), select only resolutions and frequencies that are supported by your monitor. In the following table, only the maximum resolution and horizontal and vertical frequencies supported by the monitor are listed. The `kdmconfig` program will display the lower resolutions supported by the monitor.

Table A-3 Supported Intergraph G91 Monitor Configurations

Monitor	Maximum Resolution	Hfreq (kHz)	Vfreq (Hz)
InterVue 20	1280x1024	81.25	76.00
InterVue 21	1600x1280	100.96	76.02
InterVue 27	1600x1280	80.07	60.25