

Silicon Graphics® Octane® Workstation
VPro™ Graphics Upgrade Kit
Installation Guide

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Contents

List of Figures v

List of Tables vii

**Silicon Graphics® Octane® Workstation
VPro™ Graphics Upgrade Kit
Installation Guide** 1

Checking Your Shipment 2

Checking the Power Supply and Operating System 2

Upgrading the Operating System and Flashing the PROM 4

 Verifying the Operating System Installation 4

 Verifying the PROM Revision 4

 Installing the IRIX 6.5.8 Patch 4

Preparing to Remove the XIO Quad-Module 5

 Attaching the Wrist Strap 7

 Compression Connector Caution 8

Removing the XIO Quad-Module 9

About the XIO Tri-Module and XIO Boards 11

Removing the XIO Tri-Module from Its Packaging 12

Installing the XIO Tri-Module 13

 Powering On the Octane Workstation 17

Verifying the VPro graphics Installation 18

Installing an XIO Option Board 19

 Removing an XIO Option Board or Blank Panel 20

 Installing the New XIO Option Board 22

Verifying the Option Board Installation 24

Pinout Assignments for VPro Graphics Board I/O Ports 25

List of Figures

Figure 1	Hardware Inventory List	2
Figure 2	Displaying the Installed Version of IRIX	3
Figure 3	Powering Off the Octane Workstation	5
Figure 4	Removing the Monitor Cable	6
Figure 5	Attaching the Wrist Strap	7
Figure 6	Identifying the Compression Connector	8
Figure 7	Loosening the XIO Module Screws	9
Figure 8	Releasing the XIO Quad-Module	10
Figure 9	Removing the XIO Quad-Module	10
Figure 10	XIO Tri-Module	12
Figure 11	Inserting the XIO Tri-Module	13
Figure 12	Tightening the XIO Tri-Module Captive Screws	14
Figure 13	Reconnecting the Monitor Cable	15
Figure 14	XIO Tri-Module with VPro Graphics I/O Ports	16
Figure 15	Powering On the Octane Workstation	17
Figure 16	Identifying the Slots Used by an XIO Option Board	19
Figure 17	Placing the Cap on the XIO Compression Connector	20
Figure 18	Removing the Screws from the Blank Panel	20
Figure 19	Removing the Blank Panel	21
Figure 20	Installing the Screws	22
Figure 21	Removing the Cap from the Option Board Compression Connector	23

List of Tables

Table 1	Genlock Pinout Assignments	25
Table 2	StereoView Pinout Assignments	25
Table 3	Swap Ready Pinout Assignments	26
Table 4	20-inch Monitor Pinout Assignments	27
Table 5	DDC-Enabled Monitor Pinout Assignments	28
Table 6	VPro Graphics Board Scan Rates	29

Silicon Graphics® Octane® Workstation VPro™ Graphics Upgrade Kit Installation Guide

Welcome to VPro graphics, an SGI technology!

This guide shows you how to upgrade your Octane workstation with VPro graphics.

Caution: To install VPro graphics, your workstation must have the correct power supply. Also, your workstation *must* be running version 6.5 or later of the IRIX operating system. If you are sure your workstation meets these requirements, begin the installation. If you are not sure your workstation meets these requirements, begin by checking your power supply and operating system, as described on page 2.

This guide covers the following topics:

- “Checking Your Shipment” on page 2
- “Checking the Power Supply and Operating System” on page 2
- “Upgrading the Operating System and Flashing the PROM” on page 4
- “Preparing to Remove the XIO Quad-Module” on page 5
- “Removing the XIO Quad-Module” on page 9
- “About the XIO Tri-Module and XIO Boards” on page 11
- “Removing the XIO Tri-Module from Its Packaging” on page 12
- “Installing the XIO Tri-Module” on page 13
- “Verifying the VPro graphics Installation” on page 18
- “Installing an XIO Option Board” on page 19
- “Verifying the Option Board Installation” on page 24
- “Pinout Assignments for VPro Graphics Board I/O Ports” on page 25

Checking Your Shipment

The following items are included with this shipment:

- IRIX 6.5.8 Upgrade CDs
- IRIX 6.5.8 patch CD
- Wrist strap
- Reversible Phillips screwdriver
- XIO Tri-Module

Checking the Power Supply and Operating System

To install VPro graphics, your workstation must have the correct power supply and the correct operating system. To verify this information, follow these steps:

1. Check your power supply by entering `hinv -m` in a command line window.

The hardware inventory list appears, as shown in the example in Figure 1.

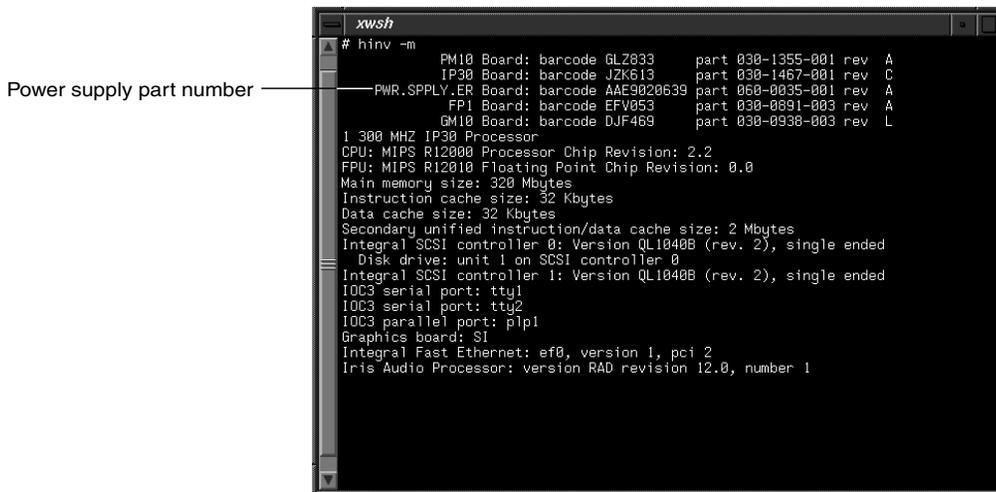


Figure 1 Hardware Inventory List

2. Verify the following information in the third line of the hardware inventory list:

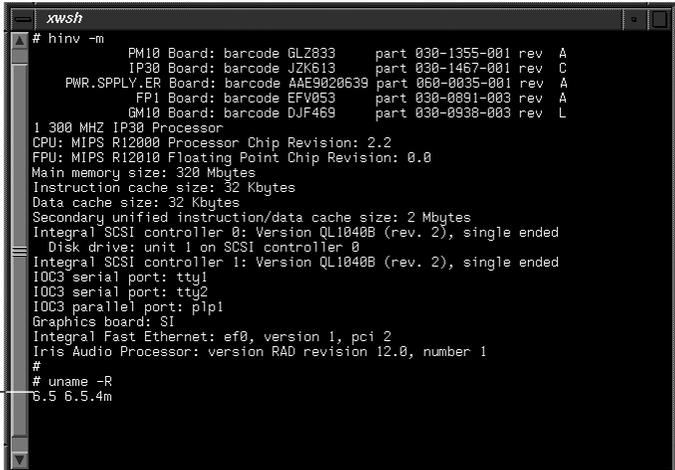
The part number for `PWR.SPPLY.ER` must be: `060-0035-00x`, where $x = 1$ or higher, as shown in the example in Figure 1.

Note: If the above part number is not displayed for `PWR.SPPLY.ER`, you cannot install VPro graphics. To purchase the correct power supply, contact your authorized SGI sales representative. To install a new power supply, follow the instructions included with the power supply, or in Chapter 3 of your *Octane Workstation Owner's Guide*, then continue with step 3.

3. Check the version of your operating system by entering `uname -R` below the hardware inventory list, and verify the following information:

The version of IRIX displayed below `uname -R` must be: `6.5 6.5x (m or f)` as shown in the example in Figure 2, where $x = 1$ or higher ($m =$ Maintenance stream, $f =$ Feature stream).

Note: If your workstation is not running IRIX 6.5 or later, you cannot proceed with the VPro graphics installation. To purchase the correct operating system, contact your authorized SGI sales representative.



```
xvsh
# hinv -m
PM10 Board: barcode GLZ833      part 030-1355-001 rev A
IP30 Board: barcode JZK619      part 030-1467-001 rev C
PWR.SPPLY.ER Board: barcode AAE9020639 part 060-0035-001 rev A
FP1 Board: barcode EFV053       part 030-0891-003 rev A
GM10 Board: barcode DJF469      part 030-0938-003 rev L

1 300 MHZ IP30 Processor
CPU: MIPS R12000 Processor Chip Revision: 2.2
FPU: MIPS R12010 Floating Point Chip Revision: 0.0
Main memory size: 320 Mbytes
Instruction cache size: 32 Kbytes
Data cache size: 32 Kbytes
Secondary unified instruction/data cache size: 2 Mbytes
Integral SCSI controller 0: Version QL1040B (rev. 2), single ended
Disk drive: unit 1 on SCSI controller 0
Integral SCSI controller 1: Version QL1040B (rev. 2), single ended
I/O3 serial port: tty1
I/O3 serial port: tty2
I/O3 parallel port: plp1
Graphics board: SI
Integral Fast Ethernet: ef0, version 1, pci 2
Iris Audio Processor: version RAD revision 12.0, number 1
#
# uname -R
6.5 6.5.4m
```

Installed version of IRIX

Figure 2 Displaying the Installed Version of IRIX

Upgrading the Operating System and Flashing the PROM

To install VPro graphics, your workstation must have IRIX 6.5.8 installed and PROM revision 4.0 or later. If you have the correct power supply and IRIX 6.5 or later is installed, you can upgrade your operating system and flash the PROM by using the IRIX 6.5.8 Upgrade CDs.

To install IRIX 6.5.8 and flash the PROM, follow the software installation instructions included with the IRIX 6.5.8 Upgrade CDs.

Verifying the Operating System Installation

Verify the installation of IRIX 6.5.8 as follows:

In a command line window, enter `uname -R`.

Verifying the PROM Revision

Verify the PROM revision as follows:

1. While the system is booting, press the **Esc** key.
The PROM menu appears.
2. Choose **Enter Command monitor** in the PROM menu.
The Command line interface screen appears.
3. Enter `version` and verify the following:

`SGI version 6.5 Rev 4.14 IP30`, where 4.0 or later is the correct PROM revision.

You can also verify your PROM revision by typing `flash -v` in a UNIX shell.

Installing the IRIX 6.5.8 Patch

After you upgrade your operating system and flash the PROM, restart your system, and then use the provided IRIX 6.5.8 patch CD to install the required software patch. Follow the installation instructions in the release notes included with the IRIX 6.5.8 patch CD, and then reboot your system.

Preparing to Remove the XIO Quad-Module

Before you install the XIO Tri-Module, you must remove the XIO Quad-Module. You begin by preparing your workstation.

1. Open the cover and push the power button (see A in Figure 3) to power off the Octane workstation.
2. Unplug the power cable (B).
3. Press the monitor power switch (C) to power off your monitor.

Wait 5 minutes before removing the XIO module.

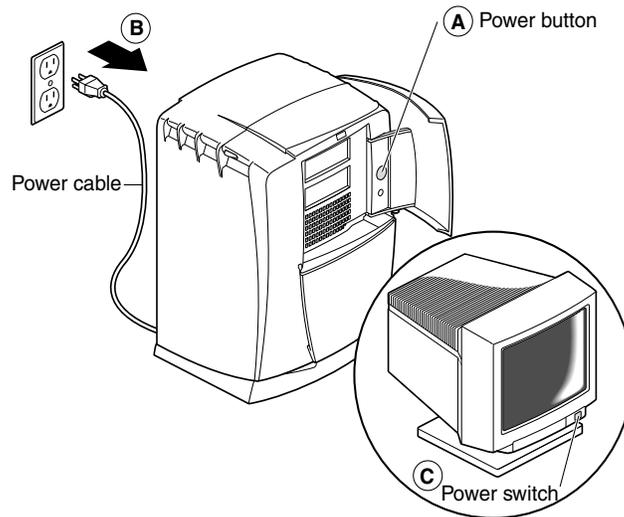


Figure 3 Powering Off the Octane Workstation



Warning: The heat sinks on the XIO boards get very hot. Wait 5 minutes after powering off the workstation before you remove the XIO Quad-Module. Test before touching any of the XIO boards.

4. Remove all the cables from the XIO Quad-Module (only one is shown in Figure 4), then attach the wrist strap, as described in the next section.

For illustration purposes, the optional PCI module is shown installed.

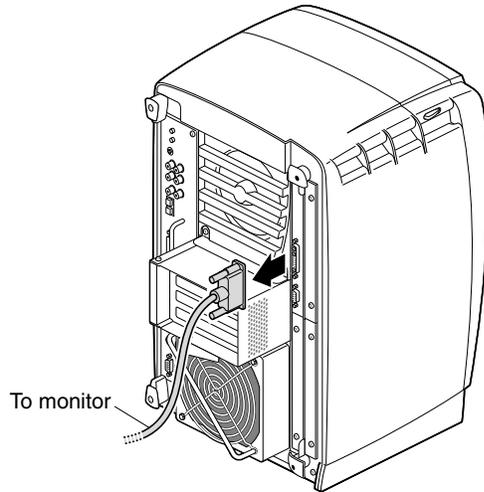


Figure 4 Removing the Monitor Cable

Attaching the Wrist Strap

Caution: The components inside the workstation are extremely sensitive to static electricity; you must wear the wrist strap while replacing parts inside the workstation.

To attach the wrist strap, follow these steps:

1. Unroll the first two folds of the band (see A in Figure 5).
2. Wrap the exposed adhesive side firmly around your wrist (B), unroll the rest of the band, and then peel the liner from the copper foil at the opposite end.
3. Attach the copper foil to any exposed electrical ground, such as a metal part of the workstation (C).

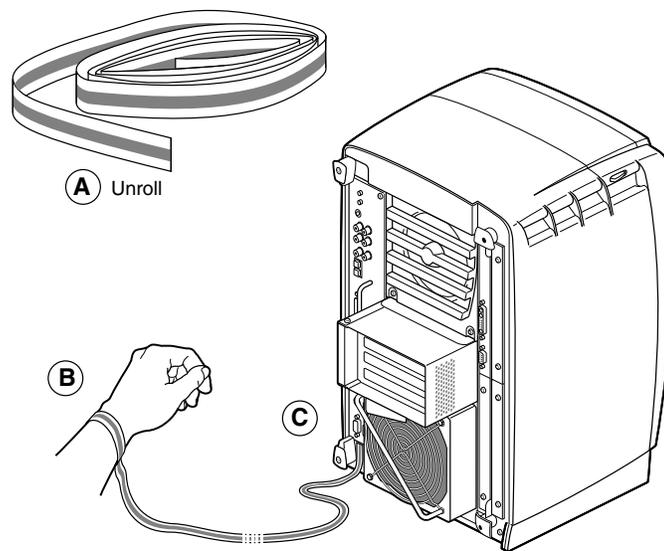


Figure 5 Attaching the Wrist Strap

Compression Connector Caution

Caution: The compression connectors on all XIO graphics boards and most option boards are very delicate and easily damaged. Do not touch or bump the gold bristled pad (see Figure 6). The connectors are on the side opposite the handles. Do not grab the back of the XIO module when you remove it, or the compression connectors may be damaged.

Always place a cap on all compression connectors after removing XIO boards. Caps are included with your workstation. Remove all caps from the compression connectors before installing XIO boards in your workstation.

Before you remove the XIO Quad-Module, read Appendix B in your *Octane Workstation Owner's Guide*, "Care and Cleaning of the Compression Connector."

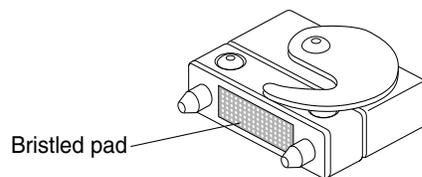


Figure 6 Identifying the Compression Connector

Removing the XIO Quad-Module

After you power off your workstation and attach the wrist strap, wait 5 minutes for the heat sinks to cool, then follow these steps to remove the XIO Quad-Module:

1. Use the provided Phillips reversible screwdriver to loosen the two captive screws in the XIO Quad-Module handles until the screws are disconnected from the chassis, as shown in Figure 7.

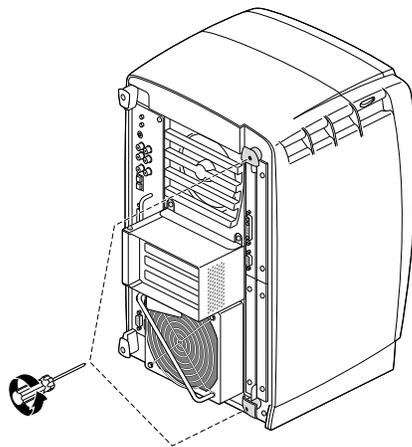


Figure 7 Loosening the XIO Module Screws



Warning: The heat sinks on the XIO boards get very hot. Wait 5 minutes after powering off the workstation before you remove the XIO module. Test before touching any of the XIO boards.

2. Grasp the handles and pull them until the XIO Quad-Module protrudes about an inch from the chassis, as shown in Figure 8.

The handles and XIO Quad-Module move out about 1 inch before the I/O panels move.

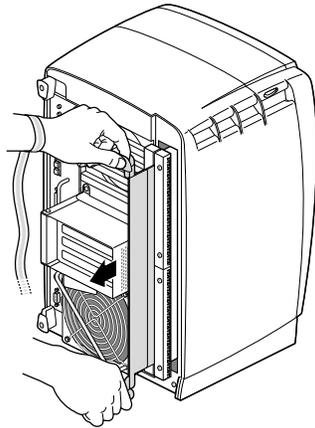


Figure 8 Releasing the XIO Quad-Module

3. Grasp the XIO Quad-Module along its length, and support the base of the module as you remove it from the chassis, as shown in Figure 9.

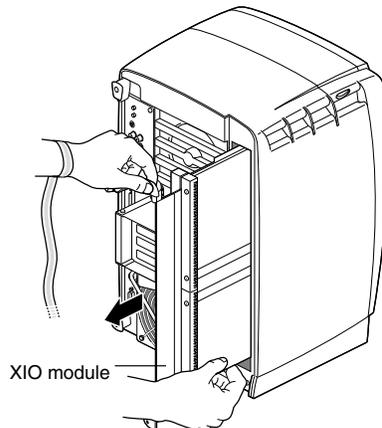


Figure 9 Removing the XIO Quad-Module

4. Place a cap on the compression connector, then place the XIO Quad-Module in an antistatic bag.

About the XIO Tri-Module and XIO Boards

The XIO Tri-Module is a tray-like holding mechanism for VPro graphics and XIO option boards. You can connect up to three option boards to the XIO Tri-Module using slots A/B, C, and D. The VPro graphics board occupies slot A/B. Option boards or blank panels occupy slots B, C, and D.

- The VPro graphics board must occupy slot A/B (slot B is a daughterboard slot).
- You can install option boards in slots B, C, and D.
- Protective blank panels must be placed in unused slots.
- If you lose a screw that holds a single-layer option board or blank panel to the XIO Tri-Module, use M3 x 8 mm size screws. To hold option boards with attached daughterboards to the XIO Tri-Module, use the screw size listed in your option board manual.

Note: The VPro graphics I/O panel must be placed at the top as you insert the XIO Tri-Module, or damage can occur due to overheating.

Removing the XIO Tri-Module from Its Packaging

1. Remove the XIO Tri-Module from its antistatic bag.
2. Place the antistatic bag on a flat surface, such as your desk.
3. Place the XIO Tri-Module on the antistatic bag.

When the XIO Tri-Module is out of the chassis, the sliding handles must protrude, as shown in Figure 10. If they do not protrude, pull them out about an inch.

A label identifies each XIO slot, (D and A on one side, C and B on the other). Slot B is a daughterboard slot that is located on the other side of the VPro graphics board.

4. Remove the cap from the compression connector, as shown in Figure 10.

Note: Do not push on the sliding handles. Later, when you reinsert the XIO Tri-Module, the sliding handles must protrude.

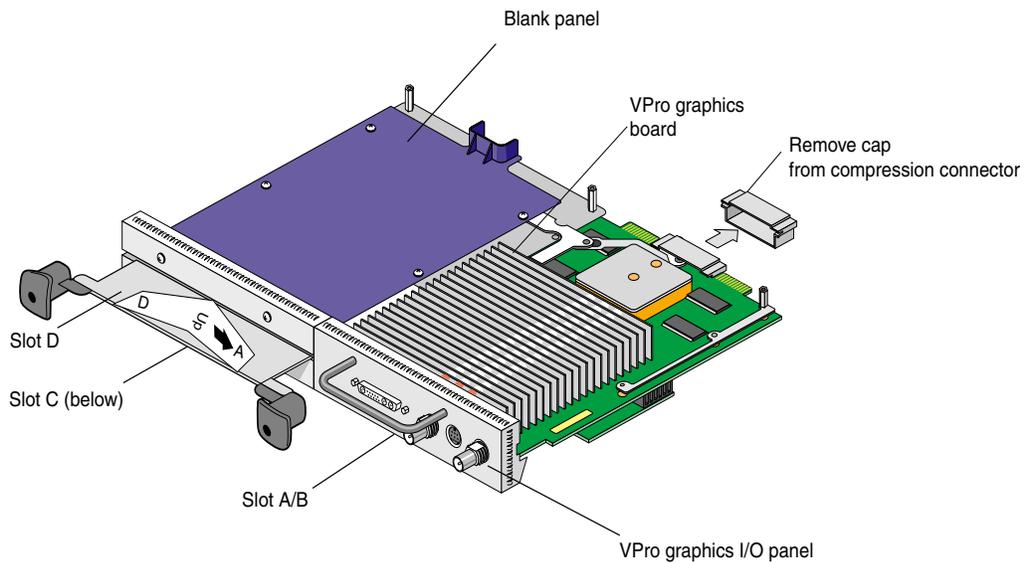


Figure 10 XIO Tri-Module

Installing the XIO Tri-Module

Caution: Install the XIO Tri-Module with the VPro graphics I/O panel aligned with the top of the workstation, as shown in Figure 11. The board can be damaged if aligned with the bottom of the workstation.

Make sure the cap is removed from the compression connector, then follow these steps to install the XIO Tri-Module:

1. Slide the XIO Tri-Module into the guides on the top and bottom of the workstation.
2. Before you insert the XIO Tri-Module, make sure the sliding handles protrude in a locked position from the I/O panels, as shown in Figure 11.

If the sliding handles are flush with the I/O panels, the XIO Tri-Module will stop during insertion. Pull out the sliding handles until the sliding portion of the XIO Tri-Module looks like Figure 11.

3. Grasp the immovable handle with one hand while supporting the XIO Tri-Module with the other, and slide the module into the chassis.

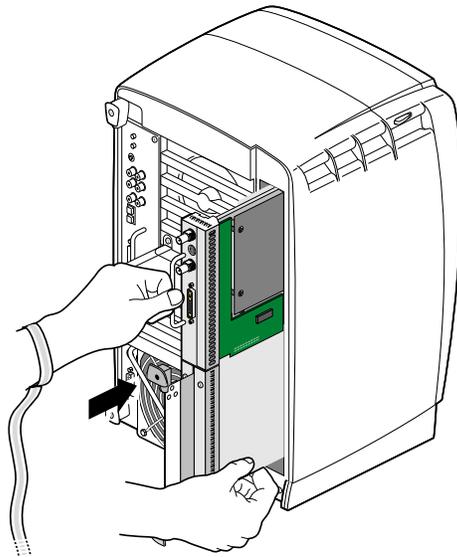


Figure 11 Inserting the XIO Tri-Module

4. Use the immovable handle to push the XIO Tri-Module into a locked position.
The I/O panels are nearly flush with the workstation when properly inserted, but there is a slight variation in the depth of the boards.
5. Push the sliding handles until the sliding portion of the module is flush with the workstation.
6. Tighten the captive screws in the sliding handles, as shown in Figure 12.
7. Remove the wrist strap.

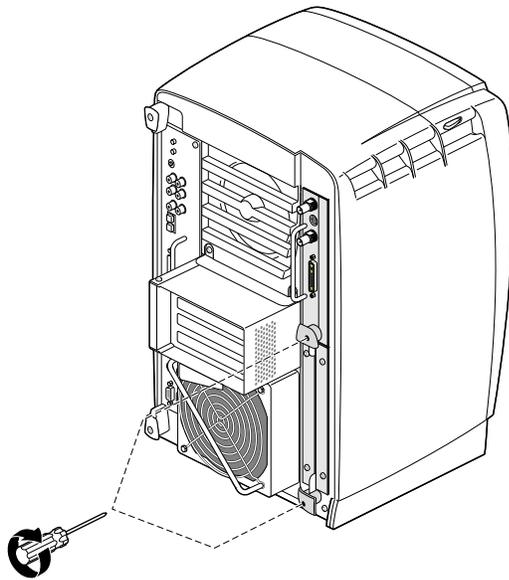


Figure 12 Tightening the XIO Tri-Module Captive Screws

8. Reconnect the monitor cable (see Figure 13) and all XIO cables to the XIO Tri-Module.
9. Connect any new cables to the XIO Tri-Module.

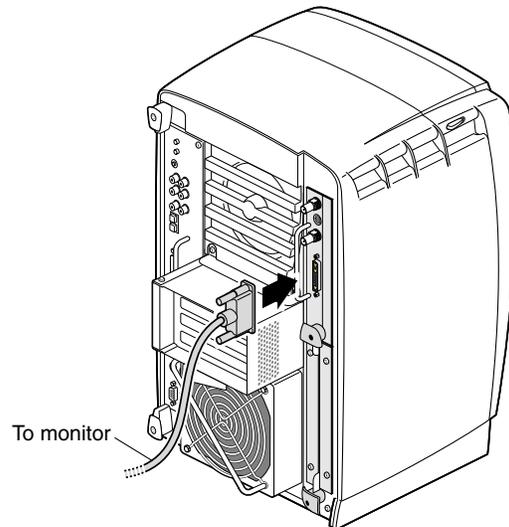


Figure 13 Reconnecting the Monitor Cable

The XIO Tri-Module installation is complete!

Figure 14 shows an Octane workstation with an XIO Tri-Module installed. Each VPro graphics board I/O port is identified in the figure.

Now go to “Powering On the Octane Workstation” on page 17.

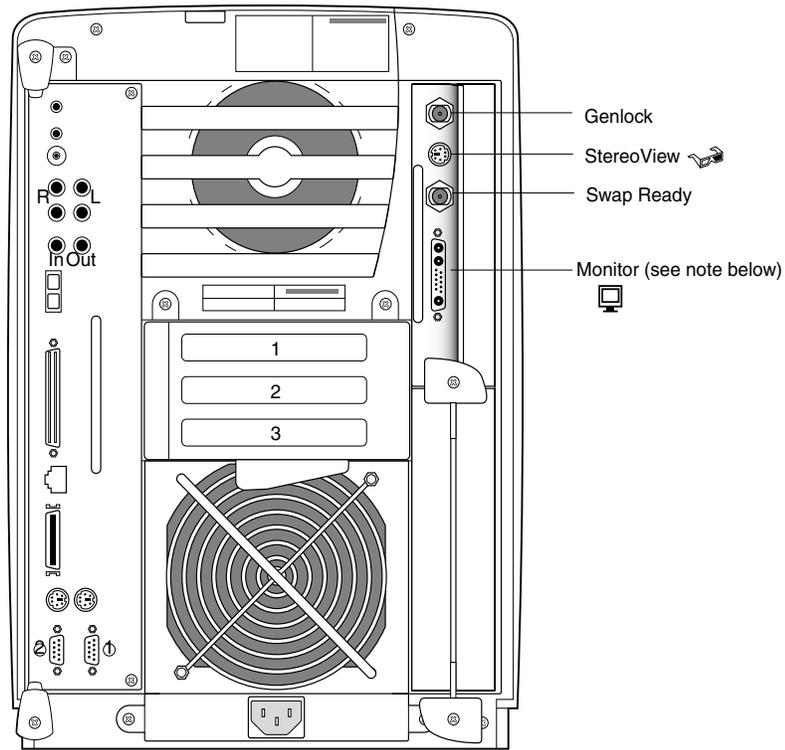


Figure 14 XIO Tri-Module with VPro Graphics I/O Ports

Note: For VPro graphics, a 1280 x 1024 display resolution is only possible using the Sony G1 21" or 24" monitors at a vertical refresh rate of 96Hz. If you have another monitor, you cannot run 1280 x 1024 resolution at any vertical refresh rate. For a matrix of supported scan rates, see page 29.

Powering On the Octane Workstation

1. Plug the power cable (see A in Figure 15) into an electrical outlet.
2. Press the power button (B) on the front of your workstation.
3. Press the monitor power switch (C) to power off your monitor.

If you do not have the correct power supply, a reminder message appears on your screen.

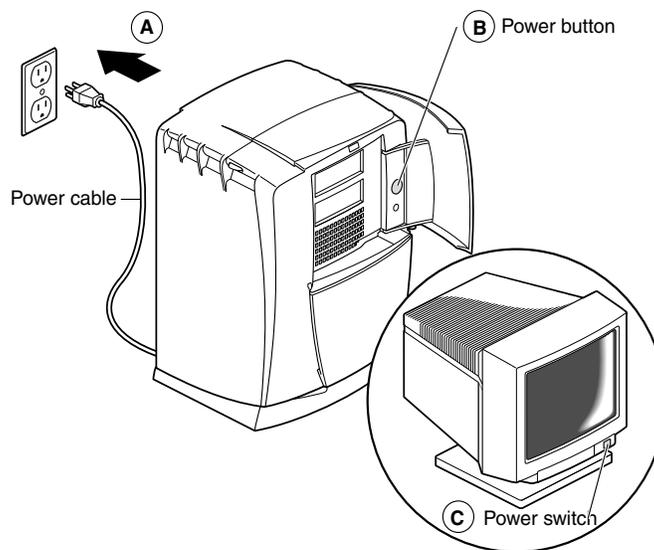


Figure 15 Powering On the Octane Workstation

Verifying the VPro graphics Installation

You can verify your VPro graphics board installation as follows:

1. From the Toolchest > Desktop, open a UNIX shell.
2. At the prompt, type: `hinv`.
3. Look for a line similar to this:
`graphics board: V6 or V8`
4. If your system does not recognize the VPro graphics board, repeat the installation procedure.
5. If your system does not recognize the VPro graphics board after repeating the installation procedure, see Chapter 9, "Troubleshooting," in your *Octane Workstation Owner's Guide*.
6. If your system does not recognize the VPro graphics board after following the troubleshooting procedures, contact your authorized SGI service representative.

Installing an XIO Option Board

Before installing an option board in slot C or D, you must power off your workstation, wait 5 minutes, attach the wrist strap, and remove the XIO Tri-Module, as described earlier in this guide. The VPro graphics board is always installed in slot A/B, as shown in Figure 16. Slot B is a daughterboard slot that is located on the other side of the VPro graphics board.

Note: For instructions on installing a daughterboard in slot B, see your daughterboard installation guide.

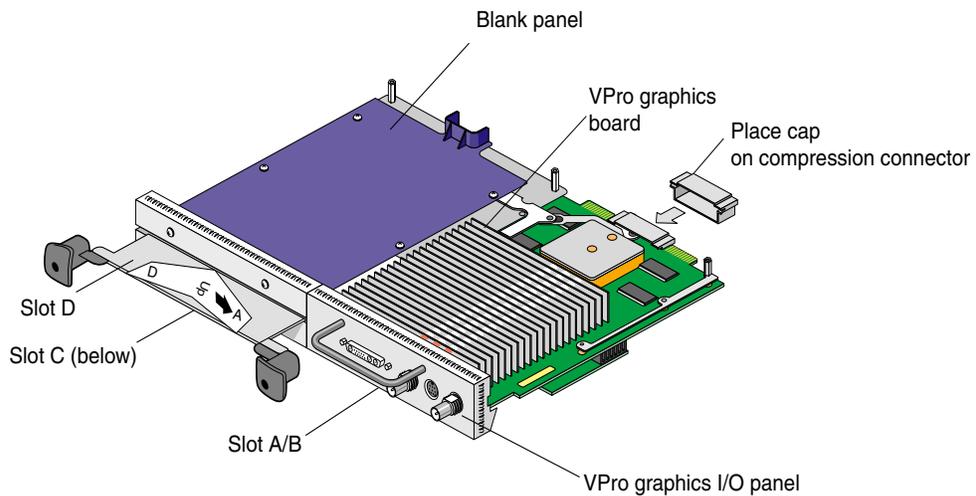


Figure 16 Identifying the Slots Used by an XIO Option Board



Warning: The heat sinks on the XIO boards get very hot. Wait 5 minutes after powering off your workstation before removing the XIO Tri-Module. Test before touching any of the XIO boards.

Note: Before you remove an option board, place a cap on the XIO compression connector (as shown in Figure 17) to prevent accidental damage when removing the board.

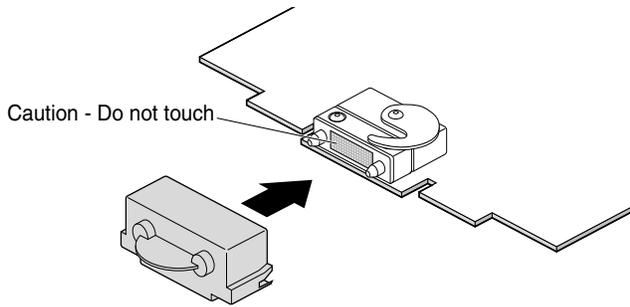


Figure 17 Placing the Cap on the XIO Compression Connector

Removing an XIO Option Board or Blank Panel

Before you install an option board in slot C or D, you *must* remove the protective blank panel or the option board currently installed in that slot. To remove an option board or a blank panel, follow these steps:

1. Using the supplied Phillips reversible screwdriver, remove the screws from the option board or blank panel occupying the desired slot, as shown in Figure 18.

Note: The following illustrations show you how to remove a blank panel.

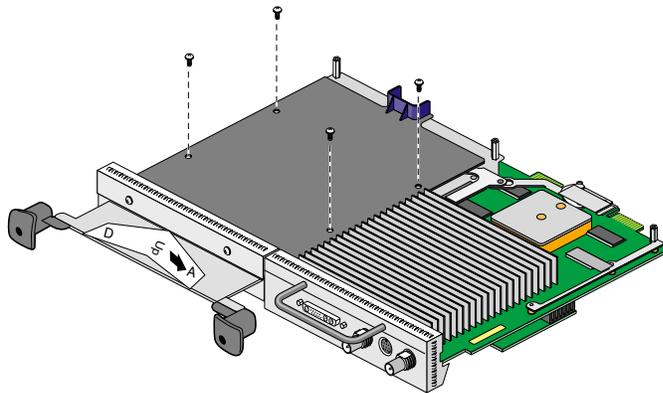


Figure 18 Removing the Screws from the Blank Panel

2. Grasp the blank panel or option board on the front and on the side of the board that has no connectors, and lift it, as shown in Figure 19.

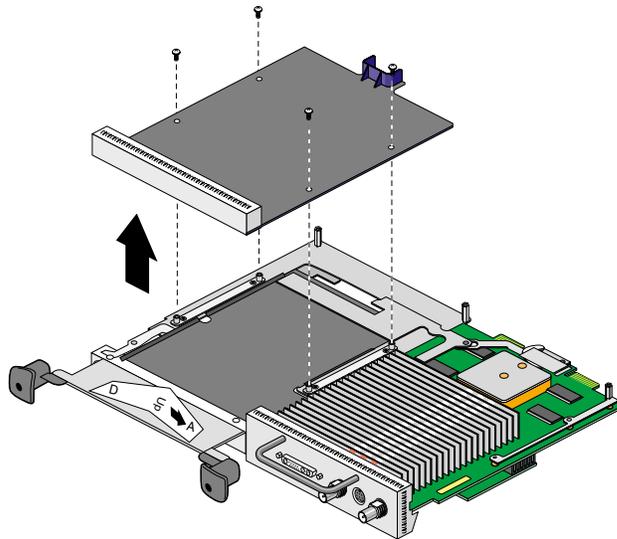


Figure 19 Removing the Blank Panel

3. With the same side facing up, place the blank panel or option board on a clean, antistatic surface.

Note: If you removed an option board, store it in an antistatic bag. If you removed a blank panel, store it in a safe place. In the future, if you remove an option board, you need to replace it with another option board or a blank panel.

To reinstall a blank panel, follow the same instructions for installing an option board, as described in the next section.

Installing the New XIO Option Board

Note: For complete instructions on installing your option board, refer to your option board installation manual.

1. Place the option board on the standoffs.
Some option boards must be placed in designated slots. Always check your option board installation manual for information about board placement or other pertinent information.
2. Install the screws (as shown in Figure 20), tightening the board to the standoffs.
Make sure all the slots are filled, with the VPro graphics board, and either an option board, or blank panel. The system does not cool properly if any of the slots is empty.

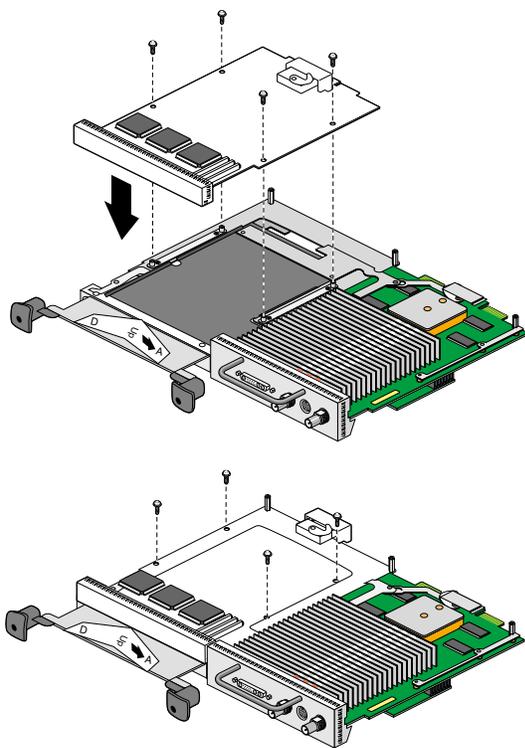


Figure 20 Installing the Screws

3. Remove the cap from the XIO compression connectors.

Keep the caps to protect the compression connector if you remove any XIO board.

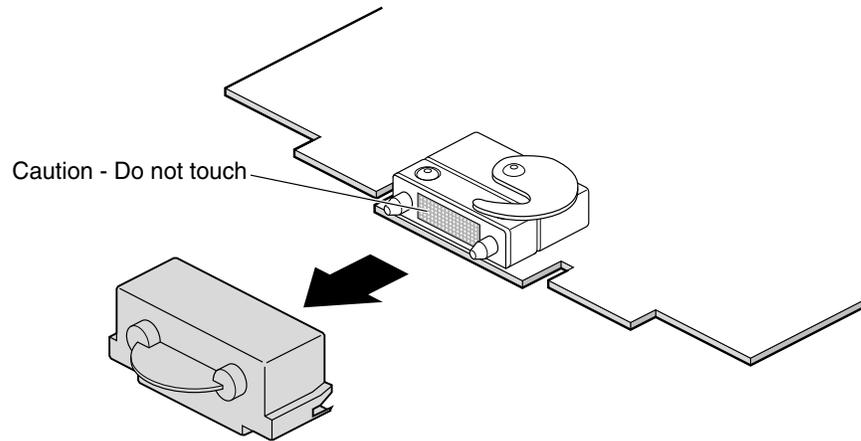


Figure 21 Removing the Cap from the Option Board Compression Connector

4. Install the XIO Tri-Module, then power on your workstation, as described in "Powering On the Octane Workstation" on page 17.

Verifying the Option Board Installation

You can verify your option board installation by using the *hinu* command.

To verify that the system recognizes the option board, follow these steps:

1. From the Toolchest > Desktop, open a UNIX shell.
2. At the prompt, type: **hinu**.
3. Look for a line similar to this:

name of option board, module x slot x: revision x

If the system does not recognize your option board, repeat the installation procedure.

4. If the system still does not recognize your option board, refer to the “Troubleshooting” section in your *Octane Owner’s Guide* or your option board manual.
5. If you continue to have problems, contact your authorized SGI service representative.

Pinout Assignments for VPro Graphics Board I/O Ports

Genlock Port

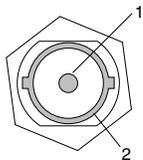


Table 1 shows the cable pinout assignments for the VPro graphics board Genlock port.

Table 1 Genlock Pinout Assignments

Pin	Assignment
1	Genlock input/output video or 3.3V TTL signal levels
2	Signal return ground

StereoView Port

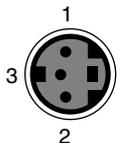


Table 2 shows the cable pinout assignments for the VPro graphics board StereoView port.

Table 2 StereoView Pinout Assignments

Pin	Assignment
1	+12V DC output to StereoView device
2	Ground
3	Stereo left/right Eye signal (1=left, 0=right) (STEREO_LEFT)

Swap Ready Port

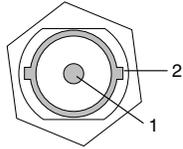


Table 3 shows the cable pinout assignments for the VPro graphics board Swap Ready port.

Table 3 Swap Ready Pinout Assignments

Pin	Assignment
1	Swapbuffer Gang Sync open collector I/O
2	Signal return ground

Monitor Port

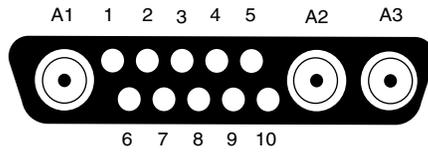


Table 4 shows the VPro graphics board port pinout assignments for the Octane 20" monitor.

Table 4 20-inch Monitor Pinout Assignments

Pin	Assignment
A1	Red signal, analog
A2	Green signal, analog
A3	Blue signal, analog
1	Monitor ID bit 3, TTL
2	Monitor ID bit 0, TTL
3	Composite Sync (active low), TTL
4	Horizontal Sync (active high), TTL
5	Vertical Sync (active high), TTL
6	Monitor ID bit 1, TTL
7	Monitor ID bit 2, TTL
8	Ground
9	Ground
10	Ground

Table 5 shows the VPro graphics board port pinout assignments for an Octane DDC-enabled monitor.

Table 5 DDC-Enabled Monitor Pinout Assignments

Pin	Assignment
A1	Red
A2	Green
A3	Blue
1	Data clock (SCL)
2	Bi-directional data (SDA)
3	Composite Sync
4	Horizontal Sync
5	Vertical Sync
6	DDC (+5VInput)
7	DDC ground
8	Chassis ground
9	Chassis ground
10	Chassis ground

Table 6 lists the VPro graphics board supported scan rates.

Table 6 VPro Graphics Board Scan Rates

Format Name	Vertical Refresh Rate (Hz)
640 x 480_60	59.940
800 x 600_60	60.317
1024 x 768_60	60.004
1024 x 768_75	60.317
1280 x 720_60	60.000
1280 x 720_72	72.002
1280 x 1024_60_safe	60.020
1280 x 1024_96	96.037
1600 x 1024_83	82.982
1600 x 1200_72	72.013
1600 x 1200_75	75.000
1920 x 1080_72	72.005
1920 x 1200_60	60.017
1280 x 1024_100s	50.000 per eye

Note: For VPro graphics, a 1280 x 1024 display resolution is only possible using the Sony G1 21" or 24" monitors at a vertical refresh rate of 96Hz. If you have another monitor, you cannot run 1280 x 1024 resolution at any vertical refresh rate.

