Silicon Graphics® Octane2™ Duo Installation Guide

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Record of Revision

Version	Description
001	November 2001 Initial version

Contents

Figures

Tables

About This Guide

This guide describes the installation, use, troubleshooting, and removal of the Duo upgrade in an Octane2 workstation.

The Octane2 Duo upgrade allows a single Octane2 workstation to be simultaneously used by two people.

The guide is organized as follows:

- This section provides additional hardware information, software and system administration information, and product support information.

- Chapter 1 provides an overview of the Octane2 Duo option, describes the kit contents, and lists the requirements for a system to be upgradable.

- Chapter 2 provides information about installing the software for the Duo upgrade.

- Chapter 3 provides information about installing the hardware for the Duo upgrade.

- Chapter 4 provides information about connecting the secondary keyboard and mouse.

- Chapter 5 provides information about configuring the system and verifying the installation.

- Chapter 6 provides information about using the Duo system.

- Chapter 7 provides troubleshooting information.

- Chapter 8 provides information about removing the Duo upgrade.

- Appendix A provides information about the care and cleaning of the compression connectors.

- Appendix B provides information about choosing a graphics head (for software developers).

- Appendix C provides information about cabling and configuring the PCI Ethernet card.

- An Index completes this guide.

Related Publications

The following documents contain additional information that may be helpful:

- *Octane2 Workstation Owner's Guide*
- *Silicon Graphics Octane2 Dual Head Installation Guide*
- *Silicon Graphics Octane2 Workstation Dual Channel Display Installation Guide*
- *Personal System Administration Guide*

Obtaining Publications

To obtain SGI documentation, go to the SGI Technical Publications Library at:

```
http://techpubs.sgi.com
```

Conventions

The following conventions are used throughout this document:

Convention	Meaning
`command`	This fixed-space font denotes literal items such as commands, files, routines, path names, signals, messages, and programming language structures.
variable	Italic typeface denotes variable entries and words or concepts being defined.
`user input`	This bold, fixed-space font denotes literal items that the user enters in interactive sessions. Output is shown in nonbold, fixed-space font.
[]	Brackets enclose optional portions of a command or directive line.
...	Ellipses indicate that a preceding element can be repeated.
GUI	This font denotes the names of graphical user interface (GUI) elements such as windows, screens, dialog boxes, menus, toolbars, icons, buttons, boxes, fields, and lists

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Octane2 Duo Overview

This chapter provides an overview of the Silicon Graphics Octane2 Duo option.

Description of the Silicon Graphics Octane2 Duo Option

The Silicon Graphics Octane2 Duo option allows the connection of a second keyboard and a second mouse to an Octane2 workstation, thus allowing a Dual Head Octane2 workstation to be simultaneously used by two people.

In addition to adding connections for the keyboard and mouse, the upgrade kit also adds more main memory and an additional hard disk drive.

Octane2 Duo Upgrade Kit Contents

The Octane2 Duo upgrade kit contains the following items (illustrated in Figure 1-1):

- The *Silicon Graphics Octane2 Duo Installation Guide* (this manual)
- Screwdriver
- Disposable wrist strap
- PCI module (PCI card cage)
- PCI card (with ports for keyboard, mouse, and Ethernet)
- Keyboard
- Mouse
- 24 foot (7.3 meter) extension cable for keyboard and mouse
- Additional system memory
- Additional internal hard disk drive ("option drive")
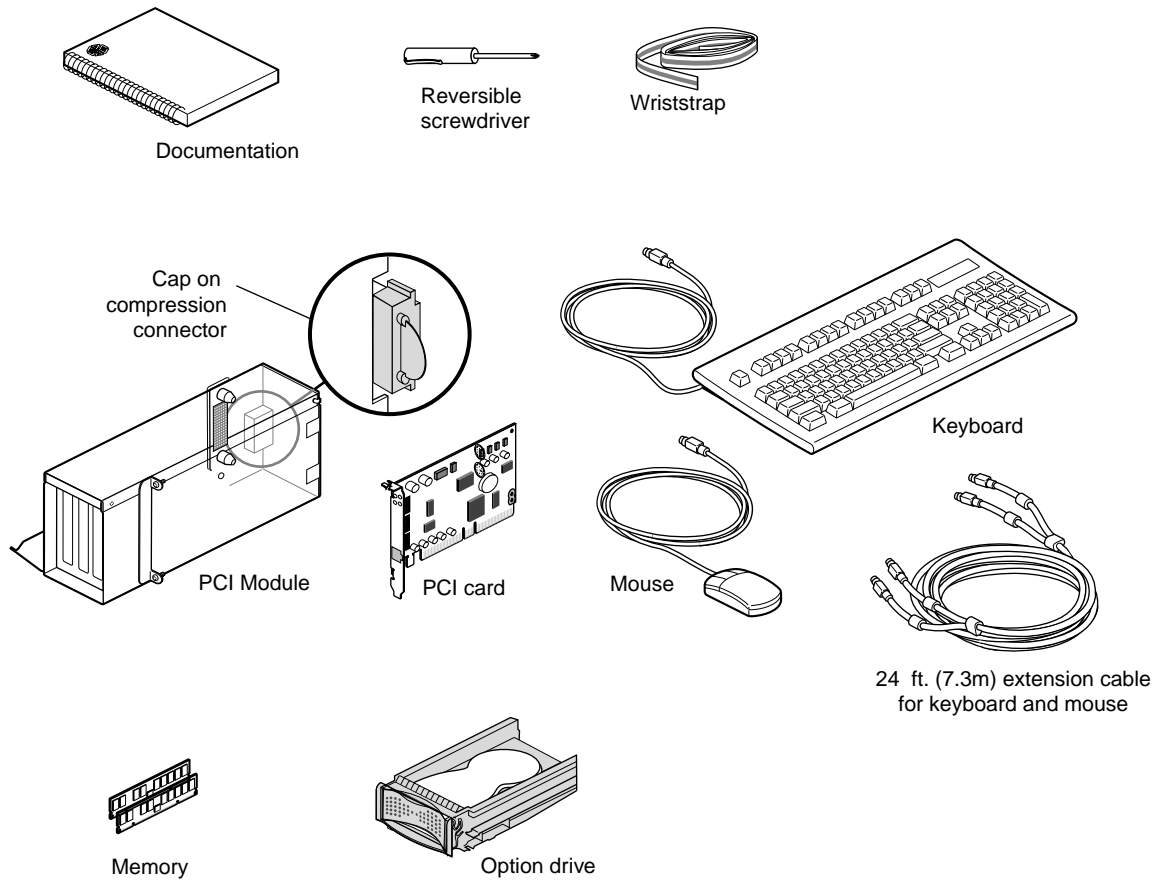
Figure 1-1   Octane2 Duo Upgrade Kit Contents

Octane2 Duo Upgrade System Requirements

To install the Octane2 Duo upgrade, your Silicon Graphics Octane2 workstation must meet the following minimum requirements:

- It must have an Octane2 Dual Head VPro graphics option installed and fully functional

- It must have at least two monitors (one on each graphics head)

- In must have two CPUs

- It must have IRIX version 6.5.14 installed with patch 4426, or any later version of IRIX

Duo Software Installation

You should install the software for your Silicon Graphics Octane2 Duo upgrade before you install the hardware. After the software and hardware are installed, Chapter 5 provides system setup and verification instructions.

The software installation process for the Duo upgrade consists of the following steps:

- Verifying your IRIX version

- Performing a system backup

- Backing up the Xserver file and enabling the Duo software

Note: Read any release notes included with your upgrade kit before installing the software to learn of any last minute changes.

Verifying Your IRIX Version

To verify the version of the IRIX operating system installed on your Octane2 system, follow the instructions in this section.

From an IRIX command prompt, type:

```
1% uname -R
```

You will see output similar to the following:

```
6.5 6.5.13f
```

Depending on your version, go to one of these sections: "IRIX 6.5.13 or Earlier," "IRIX 6.5.14," or "IRIX 6.5.15 or Later (When Available)."

IRIX 6.5.13 or Earlier

If you system has IRIX version 6.5.13 or earlier, you will need to upgrade your system to IRIX 6.5.14 with patch 4426, or IRIX 6.5.15 (when available), before installing the Duo hardware. Contact your SGI representative for more information.

IRIX 6.5.14

If you system has IRIX version 6.5.14, you will need patch 4426 before installing the Duo hardware.

To determine if you have patch 4426 installed, type the following at an IRIX command prompt:

```
2% versions patchSG0004426
```

If the output of this command is simply the headings "Name," "Date," and "Description" you do not have patch 4426 installed. This patch must be installed (or you must upgrade your system to IRIX 6.5.15 or later, when released) before installing the Duo hardware.

If the output of this command includes items below the Name-Date-Description heading, you do have patch 4426 installed, and you may install the Duo hardware.

IRIX 6.5.15 or Later (When Available)

If your system has IRIX version 6.5.15 or later (when available), you may install the Duo hardware.

Performing a System Backup

It is always a good idea to back up your system before installing any new hardware. If you have not backed up your system recently, take this opportunity to do so. For instructions on backing up your system, see the *Personal System Administration Guide*.

Backing Up the **Xserver** File and Enabling Duo Software

After ensuring that you are running an appropriate version of IRIX, you must back up the original Xserver file, enable the Duo software by installing a new Xserver file, and replace the default login screen.

Follow these instructions:

1. From **Toolchest** > **Desktop**, select **Open UNIX Shell**.

2. Become superuser by typing **su**.

3. At the prompt, type:

   ```
   cp /var/X11/xdm/Xserver /var/X11/xdm/Xserver.orig
   ```

4. At the prompt, type:

   ```
   cp /var/X11/xdm/Xserver.2key /var/X11/xdm/Xserver
   ```

5. At the prompt, type:

   ```
   chkconfig visuallogin off
   ```

6. Type **exit** to exit superuser mode.

7. Restart the system. The new login screen appears.

Proceed to Chapter 3, "Octane2 Duo Upgrade Hardware Installation" to begin installing the hardware.

Octane2 Duo Upgrade Hardware Installation

This chapter describes the installation of the hardware portion of the Silicon Graphics Octane2 Duo upgrade.

The upgrade consists of the following sections:

- "Preparing the Workstation for the Upgrade" on page 9
- "Installing the Option Drive" on page 10
- "Installing the Additional System Memory" on page 11
- "Installing the PCI Module and PCI Card" on page 13
- "Attaching the Regulatory Label" on page 15

This chapter relies heavily on your *Octane2 Workstation Owner's Guide*. Make sure you have it handy before proceeding with the upgrade.

Preparing the Workstation for the Upgrade

Before installing any new hardware in your workstation, you should first perform a complete backup of your system.

After making a backup you should shut down the operating system and power off the workstation.

The memory, PCI module, and PCI card upgrades require the use of the static dissipating wrist strap that came with your upgrade kit.

Installing the Option Drive

The Octane2 Duo upgrade includes an additional internal hard disk drive ("option drive") for your Octane2. This provides the additional storage required in order for two people to simultaneously use the system.

The instructions for installing the internal drive may be found in Chapter 7, "Installing and Removing Internal Drives and Front Module Parts," in your *Octane2 Workstation Owner's Guide.* The steps involved in the process are outlined below, along with references to specific portions of Chapter 7 in your *Octane2 Workstation Owner's Guide.*

To install the option drive, follow these steps:

1. Shut down and power off your workstation, as described on page 161 of your *Octane2 Workstation Owner's Guide*.

2. Remove the lock bar and the front bezel from your workstation, as described on pages 162 through 164 of your *Octane2 Workstation Owner's Guide*.

3. Install the internal drive into one of the empty drive bays (either the middle bay or the upper bay), as described on pages 165 through 167 of your *Octane2 Workstation Owner's Guide*.

   Note: The lower bay is used for the system drive, and will already be occupied.

4. Remove the appropriate blank panel (that is, the middle or upper one) from the front bezel, as described on pages 168 and 169 of your *Octane2 Workstation Owner's Guide*. Save the blank panel for reinstallation in case you later remove the internal drive.

5. Reinstall the front bezel and the lock bar, as described on pages 195 and 196 of your *Octane2 Workstation Owner's Guide*.

6. Power on your workstation, as described on page 197 of your *Octane2 Workstation Owner's Guide*.

7. Test the new internal option drive, as described on page 176 of your *Octane2 Workstation Owner's Guide*.

Your additional hard disk drive is now installed.

Installing the Additional System Memory

The Octane2 Duo upgrade includes additional system memory (RAM) for your Octane2. This provides the additional main memory required when two people are simultaneously using the Octane2 system.

The instructions for installing additional memory may be found in Chapter 2, "Installing and Removing the CPU and Memory," in your *Octane2 Workstation Owner's Guide.* The steps involved in the process are outlined below, along with references to specific portions of Chapter 2 in your *Octane2 Workstation Owner's Guide.*

To install the additional memory, follow these steps:

1. Shut down and power off your workstation, as described on page 32 of your *Octane2 Workstation Owner's Guide*.

2. Remove the lock bar from your workstation, as described on page 33 of your *Octane2 Workstation Owner's Guide*.

3. Remove the cables from your workstation system module, as described on page 34 of your *Octane2 Workstation Owner's Guide*.

   Note: Make a note of the location of each of the cables in order to facilitate their reconnection.

4. Attach a wrist strap to your wrist and to a ground, as described on page 35 of your *Octane2 Workstation Owner's Guide*.

   Caution: The components inside your workstation are extremely sensitive to static electricity. Always wear a wrist strap when you replace parts inside your workstation.

5. Remove the system module, as described on pages 36 through 40 of your *Octane2 Workstation Owner's Guide*.

   Caution: Be sure to place a cap over each of the two compression connectors on the system module, as described on page 40 of your *Octane2 Workstation Owner's Guide*. For more information about compression connectors, refer to Appendix A, "Care and Cleaning of Compression Connectors", in this manual.

6. Install the additional memory into the system module, as described on pages 47 through 52 of your *Octane2 Workstation Owner's Guide*.

7. Reinstall the system module into the workstation, as described on pages 53 through 56 of your *Octane2 Workstation Owner's Guide*.

8. Reconnect the cables to the system module, as described on page 57 of your *Octane2 Workstation Owner's Guide*.

9. Reinstall the lock bar, as described on page 59 of your *Octane2 Workstation Owner's Guide*.

10. Power on your workstation, as described on page 58 of your *Octane2 Workstation Owner's Guide*.

11. Verify the new memory, as described on page 60 of your *Octane2 Workstation Owner's Guide*.

Your additional system memory is now installed.

Installing the PCI Module and PCI Card

The Octane2 normally has ports to connect one keyboard and one mouse. In order to support an additional keyboard and an additional mouse, the Duo upgrade includes a PCI card that has an additional keyboard port and an additional mouse port. This card also includes an additional Ethernet port.

In order to accept a PCI card, the Octane2 requires a special PCI card cage (also called the PCI module), which is included with the Octane2 Duo upgrade.

The instructions for installing the PCI card and PCI module may be found in Chapter 4, "Installing and Removing PCI Boards," in your *Octane2 Workstation Owner's Guide.* The steps involved in the process are outlined below, along with references to specific portions of Chapter 4 in your *Octane2 Workstation Owner's Guide.*

To install the PCI card and PCI module, follow these steps:

1. Shut down and power off your workstation, as described on page 72 of your *Octane2 Workstation Owner's Guide*.

2. Attach a wrist strap to your wrist and to a ground, as described on page 74 of your *Octane2 Workstation Owner's Guide*.

    Caution: The components inside your workstation are extremely sensitive to static electricity. Always wear a wrist strap when you replace parts inside your workstation.

    ---

3. Open the PCI module, as described on page 78 of your *Octane2 Workstation Owner's Guide*.

4. Select a slot for the PCI board. Unless you intend to use slot 1 for some other purpose, use slot 1 for the Duo PCI board. For slot location information, see page 79 of your *Octane2 Workstation Owner's Guide*.

5. Install the PCI board into the PCI module, as described on pages 80 through 83 of your *Octane2 Workstation Owner's Guide*.

6. Install the PCI module into the workstation, as described on pages 100 through 103 of your *Octane2 Workstation Owner's Guide*.

Note: Save the PCI blanking plate, as it will be required in case you ever decide to remove the PCI module.

Note: Installation of the keyboard and mouse cables are covered in this book, in Chapter 4, "Connecting the Secondary Keyboard and Mouse".

7. Power on your workstation, as described on page 104 of your *Octane2 Workstation Owner's Guide*.

8. Verify the PCI module and PCI card installation, as described in "Verifying the PCI Card Installation" on page 32 of this book.

Your PCI card and PCI module are now installed.

Attaching the Regulatory Label

If you received a system upgrade label with your Duo kit, place it on the Octane2 system label, as follows:

1. Face the back of the Octane2 workstation. The system label (containing the model number/CMN number) is located at the top center of the back of the workstation, as shown in Figure 3-1.

2. Place the upgrade label over the VCCI and CISPR 22 information.
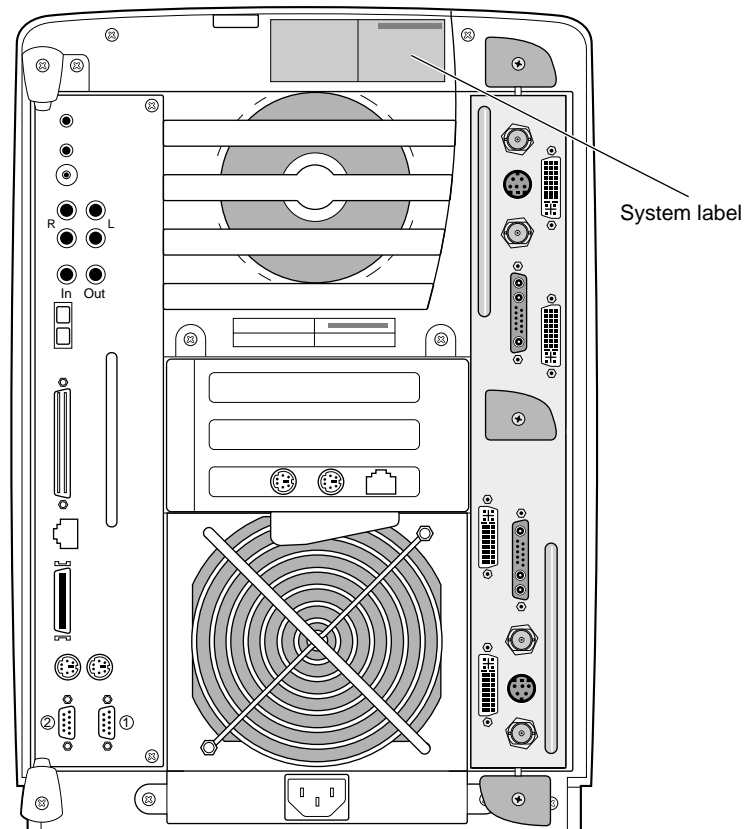
System label

Figure 3-1   Locating the System Label

Proceed to Chapter 4 to connect the second keyboard and mouse.

Connecting the Secondary Keyboard and Mouse

This chapter describes the connection of the second keyboard and mouse to the newly installed keyboard and mouse ports on the Duo PCI card in your Silicon Graphics Octane2 workstation.

Connecting Cables to the System Module

If you have not already reconnected all the cables you removed from the system module, do so now. These will typically include sound cables, Ethernet cable, and the primary keyboard and mouse cables.

Note: The keyboard and mouse ports on the system module are interchangeable. Either port will work for either device. However, you must connect both devices while the system is powered off.

For a detailed explanation of the ports and cable connections on your Octane2 workstation, refer to your *Octane2 Workstation Owner's Guide*.

Connecting Cables to the Graphics Boards

If the monitor cables are not connected, connect them now.

In a typical Dual Head system (that is, one with no display option boards), the upper connector is for the primary head and the lower connector is for the secondary head.

For more information about connecting monitors to Dual Head systems with no display option boards, see the *Silicon Graphics Octane2 Dual Head Installation Guide*. Refer to "Obtaining Publications" on page xiv for instructions about how to access this document.

If the system has a single display option board (also called a dual channel board) installed, the upper two DVI connectors are for the two monitors on the primary head.

If the system has two display option boards installed, the lower two DVI connectors are for the two monitors on the secondary head.

For more information about connecting monitors to systems with display option board(s), see the *Silicon Graphics Octane2 Workstation Display Option Board Installation Guide*. Refer to "Obtaining Publications" on page xiv for instructions about how to access this document.

Connecting Cables to the PCI Module

Connect the new keyboard and mouse as follows:

1. Connect the keyboard and mouse extension cables to the keyboard and mouse ports on the PCI card (see Figure 4-1).
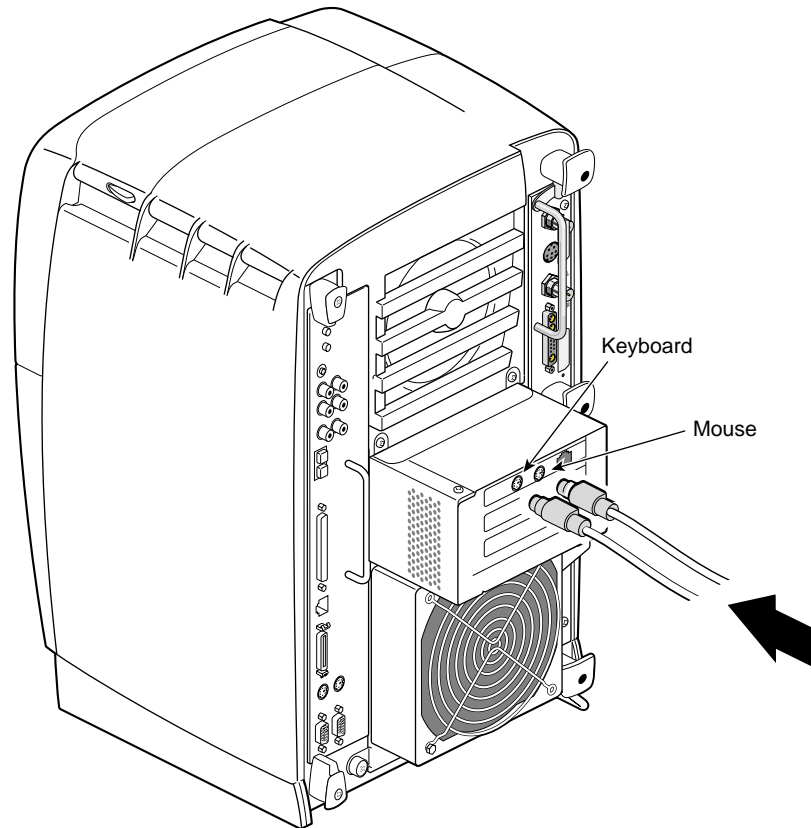
Keyboard

Mouse

Figure 4-1   Connecting the Keyboard and Mouse Cables to the PCI Card

Note: Unlike the keyboard and mouse ports on the system module, the ports on the PCI card are **not** interchangeable. Be sure to plug the keyboard cable into the keyboard port (toward the left), and the mouse cable into the mouse port (toward the right).

Tip: When plugging the keyboard and mouse cables into the ports on the PCI board, push them in firmly, as they may be a tight fit.

2. Connect the other ends of the keyboard and mouse extension cables to the keyboard and mouse at the secondary user locations.

Proceed to Chapter 5 to configure the system and verify the installation.

Configuring the System and Verifying Installation

This chapter describes how to install the software needed for the Duo configuration and provides information on system setup and verifying various hardware installations.

The information in this chapter includes:

About the Option Drive

Internal SCSI devices (drives) are automatically given an address when they are inserted. Bus 0 (which contains the internal devices) has addresses such as 0-1, 0-2, 0-3. The system drive (the lower drive) is SCSI ID 0-1 (bus 0, device1), the option drive above it (the center drive) is SCSI ID 0-2 (bus 0, device 2), and the option drive at the top of the workstation is SCSI ID 0-3 (bus 0, device 3).

Tip: To determine the total capacity and remaining space available on your disks, go to **Toolchest** > **System** > **File System Manager** and click the **Get Info** button.

Verifying an Internal Drive Installation

The workstation automatically sets up the system software for most internal devices you install and places an icon on the desktop.

Once you install the drive, follow these steps to check that the system recognizes the new drive.

1. Log in to the root account. For more information on logging in, refer to the *Octane2 Workstation Owner's Guide*, "Logging In to the Octane2 Workstation," on page 21.

2. If the device is installed correctly, you will see an icon for it on the desktop. Double-click the icon to mount the drive.

3. You can also use the System Manager to check that the drive is shown correctly.

    a. Go to **Toolchest** > **System** > **System Manager** > **Hardware and Devices** > **Disk Manager**. You will see a list of installed disk drives.

    b. Select the drive, and click the **Get Info** button.

Sometimes the Desktop does not display the icon. If the drive you installed does not appear on the Desktop, try opening a UNIX shell and typing `hinv`. If the drive does not appear to be installed, power off the system and make sure the drive is completely seated in the slot. Then restart the system and check the System Manager listing again.

Mounting the Second Drive

For the second drive to be usable, it needs to be mounted. To mount the drive, follow these steps:

1. Log in to the system as root.

2. Go to **Toolchest** > **System** > **System Manager** > **Hardware and Devices** > **Disk Manager**. You will see a list of installed disk drives.

3. Select the drive you wish to mount, and click the **Mount** button.

4. Select a file system to mount (the default choice will usually be correct).

5. Click **Next**.

6. In the window that appears, type a mount point. For example, **/disk2**.

7. Click **Next**.

8. Check the box that says **Let local users change filesystem contents.**

9. Click **Next**.

10. Check the box that says **Mount every time the system starts.**

11. Click **Next**.

12. Double check the settings, and, if they look correct, click **OK**.

   Tip: The settings will include one that says **Contents of existing directory will be hidden**. This refers to the contents of the directory on which the drive is being mounted (/disk2, for example), and should be fine.

13. Click **OK** to close the window that reports successful completion.

14. Click **Close** to close the **Disk Manager** window.

15. Select **File** > **Exit** to exit the **System Manager** window.

The disk is now mounted.

Adding Swap Space

The following procedure is a recommendation for creating a swap file on the second drive. Create more swap space only if you believe the swap space on the system disk is insufficient and you know how much more swap space you want to add.

Note: The swap space on the system disk must have a different priority number than the swap space on the second (option) disk.

To set up additional swap space, determine the amount of swap space on the system disk, and use that as a guideline to determine how much swap space to add.

1. Log in to the system as root.

2. Go to **Toolchest** > **System** > **System Manager** > **System Performance** > **Swap Manager**.

3. When the **Swap Manager** window appears, note the amount of swap space currently configured on the system disk (this information will be shown in the **Physical** column).

4. Click **Add**.

5. Click **Next**.

   The **Add Real Swap Space** dialog box appears. (Read all the information in every dialog box.)

6. Type in your chosen amount of swap space. You may enter the same amount that was on the system disk (typically 128 MB) or you can enter a different value.

7. Select the filesystem that represents the disk to which you have chosen to add the swap file, for example, `/dev/dsk/sks0d3s7`.

   Note: At this point you can choose to add additional swap space to either disk.

   ---

8. Click **Next**.

9. Click **OK** to confirm your settings.

10. Click **OK** to acknowledge completion.

11. Click **Close** to close the **Swap Manager** window.

You are finished adding swap space.

For additional information on adding swap space, go to **Toolchest** > **Help** > **Online Books** > **SGI Admin**. See *IRIX Admin: System Configuration and Operation* (refer to Chapter 6, "Configuring Disk and Swap Space") and *IRIX Admin: Disks and Filesystems*.

Adding Users

It is recommended that you place all user accounts on the second (option) disk.

To add an additional user, follow these instructions:

1. Log in to the system as root.

2. Go to **Toolchest** > **System** > **System Manager** > **Security and Access Control**.

3. Click the **Add a User Account** icon.

    The dialog box appears. Read the information in this and every dialog box before proceeding.

4. Click **Next**.

5. Type a username for the new user.

6. Click **Next**.

7. Type the new user's full name.

8. Click **Next**.

9. Press **Next** to accept the **Local Account** default.

10. Choose one of the **Password** options.

11. Click **Next**.

12. If you chose to add a password, enter it now (in both boxes), then click **Next**.

13. To accept the unique, automatically generated User ID (number), click **Next**.

14. To accept the default Primary Group for the new user, click **Next**.

15. In the **Home Directory** window, remove the default `/usr/people/username` directory.

    Because it is recommended that you place all users on the second (option) disk, rather than the system disk, replace the default `/usr/people/username` directory with the home directory of the new user on the option disk.

    To do this, type the path to a location on the disk to which you wish to add the new user. For example, `/disk2/username`.

16. Select **Verify and create as needed**.

17. Click **Next**.

18. To accept the default shell program, `csh`, click **Next**.

19. Confirm that the settings are correct, and click **OK**.

You are finished adding the new user.

Configuring Input Devices

The IRIX operating system includes support for a number of input devices. Support for additional devices can be added; see the `input` man page for details. This man page also contains the most current listing of supported devices.

1. Choose the serial port (1 or 2) to which you will connect the serial device for head 1.

   Tip: Configure the serial device for head 1 (the secondary head) first. Then configure the serial device for head 0 (the primary head).

   ---

2. Use head 0 (the primary head) to do the configuration. (All system administration tasks should be done from head 0.)

Configuring a Serial Input Device for Head 1

1. Log in to the system on head 0 as root.

2. Go to **Toolchest** > **System** > **System Manager** > **Hardware and Devices** > **Serial Device Manager**. Click the **Add Other** button.

3. Continue the installation by reading all the information in each dialog box that appears and following the on-screen directions.

   When you are done, you will have configured the device to head 0. The steps that follow reconfigure the device to head 1.

4. Check Table 5-1 on page 30 for the module name of the serial device you have configured.

5. From **Toolchest** > **Desktop** choose **Open UNIX Shell**.

6. At the prompt, type:

   `mv /dev/input/<module name> /dev/input1/<module name>`

   `Example:` **`mv /dev/input/sball /dev/input1/sball`**`.`

   In this example, **`/input/`** refers to head 0, **`/input1/`** refers to head 1, and **`sball`** to Spaceball.

7. Log out, and log in on the head for which the device was configured.

You are finished configuring a serial device to head 1.

Configuring a Serial Input Device for Head 0

1. Log in to the system on head 0 as root.

2. Go to **Toolchest** > **System** > **System Manager** > **Hardware and Devices** > **Serial Device Manager**. Click the **Add Other** button.

3. Continue the installation by reading all the information in each dialog box that appears and following the on-screen directions.

    When you are done, you will have configured the device to head 0.

4. Log out, and log in on head 0.

You are finished configuring a serial device to head 0.

Listing Serial Input Devices

To get a list of the devices configured to head 0 or head 1, follow these steps:

1. From **Toolchest** > **Desktop**, select **Open UNIX Shell**.

2. For devices configured for head 0 (the primary head) at the prompt type:

    cd /dev/input/

    For devices configured for head 1 (the secondary head) at the prompt type:

    cd /dev/input1/

3. At the prompt type **ls -l**.

    You will see something like:

    ```
    keyboard -> /hw/input/keyboard
    mouse -> /hw/input/mouse
    sball -> /hw/ttys/ttyd1
    ```

Sball is the module name for Spaceball, in this example supported on head 0 (since this was the listing for /dev/input/) and connected to serial port 1 (ttyd1).

See Table 5-1 for the module names of supported serial devices. See the `input` man page for the most current listing of supported devices.

Table 5-1   Serial Devices and Their Modular Names

Device	Module Name
Calcomp tablet	tablet
Hitachi HDG-J tablets	hitachi
Other Hitachi tablets	tablet
Wacom tablets	wacom
Dial box	dialbox
Button box	dial
Dial and button box combination	dial
Imp infra-red presentation mouse	imp
Logitech Magellan 3D controller	magellan
Spaceball	sball

Verifying the Memory Installation

1. Go to **Toolchest** > **System** > **System Manager** > **About This System** and check the amount of memory listed after the **Main Memory** heading.

   The amount of memory shown should be the total of the memory that was already in the system and the additional amount you installed. For example, if the system originally had 512 MB, and you installed two 512 MB DIMMs, the System Manager should show that you now have 1536 MB of memory.

2. If the amount of memory is incorrect, follow the directions in "Installing the Additional System Memory" on page 11 to power off your system and remove the system module. Then check the installation as follows:

   a. Check the angle of the DIMMs. They should be upright and completely seated.

   b. Check that each bank is populated with two DIMMs and that they are the same type. You must have an even number of DIMMs installed.

   c. Check the color of the label on each DIMM. Both DIMMs in a bank must be of the same size and type and must have the same colored label.

   d. Continue following the directions on page 11 until the system module is reinstalled and the system is powered back on.

3. After you have powered on the Octane2 workstation, check the amount of memory again, as described in step 1. If the amount is still incorrect, see Chapter 7, "Troubleshooting the Duo Upgrade."

Verifying the PCI Card Installation

You can verify your PCI card installation by using the `hinv` command.

To verify that your PCI card is recognized, follow these instructions:

1. From **Toolchest** > **Desktop** select **Open UNIX Shell**.

2. At the prompt, type **hinv**.

3. In the hardware inventory that follows, look for two lines similar to the following:

   ```
   Integral Fast Ethernet: ef0, version 1
   Integral Fast Ethernet: ef1, version 1
   ```

   The first line tells you that the Ethernet port on the system module is recognized. It is designated `ef0`. The second line gives you confirmation that the PCI card (containing the second Ethernet, keyboard, and mouse ports) is recognized. This is the `ef1` designation.

See Chapter 7, "Troubleshooting the Duo Upgrade," if your Duo system is not operating properly.

Selecting the Head on Which a Program Runs

During an interactive session with the Window Manager, you can use the DISPLAY environment variable to control the head on which newly started graphics programs run. When DISPLAY is set to :0.0, programs you start run on head 0 (the primary head); when it is set to :1.0, programs you start run on head 1 (the secondary head).

For convenience, the default startup files (.login, .profile) for root and guest shells set DISPLAY to a reasonable initial value, if it is not already set. Each head has a toolchest that can be used to invoke graphics programs. Each toolchest has the DISPLAY variable in its environment set to the correct value for the head on which it appears, so any application you invoke from a toolchest inherits this DISPLAY value, and thus appears on the same head as the toolchest from which it was invoked.

Similarly, programs started by clicking an icon appear on the head from which you invoked them.

Once a program has been launched, it is not possible to move it from one head to another from the Window Manager.

For more information on this topic, refer to Chapter 6, "Using the Octane2 Duo System," and read the information about using Duo. Also see Appendix B, "Choosing a Graphics Head (for Developers)".

Configuring a Duo System to Function as a Dual Head System

To configure your Duo system to function as a Dual Head system (that is, for both monitors to be used simultaneously by one person), follow these instructions:

1. Log in to the system on head 0 as root.

2. From **Toolchest** > **Desktop**, select **Open a UNIX Shell**.

3. At the prompt, type:

   ```
   cp /var/x11/xdm/Xserver.orig /var/x11/xdm/Xserver
   ```

4. Shut down the system.

5. Unplug the second keyboard and mouse.

6. Restart the system.

7. Refer to the *Dual Head Installation Guide* for information about the Dual Head system. To access the online Technical Publications Library, open your Web browser and enter **http://techpubs.sgi.com/**.

Proceed to Chapter 6 for information on using the Octane2 Duo system.

Using the Octane2 Duo System

This chapter provides information about using the Duo system. The Octane2 workstation was designed for a single user. This chapter helps you become aware of some of the idiosyncrasies that arise when two people use the Octane2 workstation simultaneously, and provides you with instructions for specific tasks.

Be sure you have read the README file on the Duo CD that directs you to the location of the release notes. The release notes, in turn, direct you to the correct software and patches, and any other information you may need to know before using the Duo system.

When using the Duo system, keep this information in mind:

- Simultaneous use of head 0 and head 1 by users in the same login account is not supported.

- System start up, shut down, and warning messages appear only on the primary head, as does the System Maintenance Menu.

- When using the **Toolchest** > **Find** menu, do not use **File QuickFind** or **Host QuickFind**, as these appear simultaneously on both the primary and secondary heads. Instead, use **Toolchest** > **Find** > **Search For Files**.

- If a System Administration tool launched from the desktop does not complete a function, despite being supplied with the root password, the same application may currently be running under a second account on the Duo system.

Table 6-1 lists more tasks with Duo-specific instructions.

Table 6-1   Tasks with Duo-Specific Instructions

Task	Instruction
Determine the head on which you are running	From **Toolchest** > **Desktop** select **Open UNIX Shell**.
	At the prompt, type **printenv DISPLAY**.
	Look for the listing DISPLAY = 0.0 or DISPLAY = 1.0.
	Head 0 is the primary head.
	Head 1 is the secondary head.
System administration tasks	Use head 0.
Logging in to a remote system from the secondary head (head 1)	In head 1 **Toolchest > Desktop** select **Open UNIX Shell**
	Log in to the remote system. Type: **rlogin guest@**_remotehost_
	At the prompt, type: **setenv DISPLAY** _localhost_**:1**
	(where _localhost_ is the name of your Octane2 system).
	The remotely displayed information from the remote host will now display to the secondary head (head 1). Without entering this command, the remotely displayed information would display to the primary head (head 0).
	When using rsh, use: **rsh user@**_remotehost_ **-display** _localhost_**:1**
	(where _localhost_ is the name of your Octane2 system).
	This command causes the output to appear on head 1.
	To run an application on a remote host and display it on head 1, use: **rsh remotehost** _applicationname_ **-display** _localhost_**:1**
	(where _localhost_ is the name of your Octane2 system and _applicationname_ is the application you are running).
Using an icon to launch an application	Launch the application from the head you want to use. The icon always appears on the head from which it was launched.
Changing a monitor setting	After changing the setting, always log out and then log back in.

Table 6-1 (continued)   Tasks with Duo-Specific Instructions

Task	Instruction
Hot plugging a mouse, keyboard, Spaceball, etc.	Hot plugging any serial device is not supported. (Hot plugging is attaching a device while the system is powered on.)
Configuring `ef0` and `ef1`	`ef0` and `ef1` cannot be configured with the same hostname and IP address even though both interfaces are on the same system.
Using audio when the Duo system is enabled	Audio is not supported when the Duo system is enabled. Power off the speakers when the Duo system is enabled.
Using audio when the Octane2 workstation is used as a single seat	Audio is supported when the Octane2 workstation is used as a single seat, and the Duo system is disabled.

For troubleshooting information about the Octane2 Duo system, see Chapter 7.

Troubleshooting the Duo Upgrade

This chapter provides you with troubleshooting information for the Silicon Graphics Octane2 Duo system. See Table 7-1 for information about specific symptoms and remedies.

Be sure you have installed any software that came with the shipment.

Troubleshooting Tips

Use the table below to help solve problems with your Octane2 Duo system.

Table 7-1   Troubleshooting Tips

Symptom	Probable Cause	Solution
System won't boot	The system module is not fully seated, or has a dirty or damaged compression connector.	See Chapter 2 in the *Octane2 Workstation Owner's Guide* for instructions on removing and re-seating the system module and checking the compression connectors.
	One or more main memory DIMMs are not fully seated or are not paired correctly.	See Chapter 2 in the *Octane2 Workstation Owner's Guide* for instructions on removing and re-seating the memory DIMMs. Ensure that each DIMM is fully seated and that each populated bank has matched DIMMs.
	One of the internal hard disk drives is not fully seated.	See Chapter 7 in the *Octane2 Workstation Owner's Guide* for instructions on removing and re-seating the internal hard disk drives.

Table 7-1 (continued)   Troubleshooting Tips

Symptom	Probable Cause	Solution
	The PCI module is not completely seated or has a dirty or damaged compression connector.	See Chapter 4 in the *Octane2 Workstation Owner's Guide* for instructions on removing and re-seating the PCI module and checking the compression connectors.
	The power cord is not completely attached.	Check the connections on the power cord.

If none of these suggestions solves your problem, refer to the documents listed in "Related Publications" on page xiv, or contact your local SGI representative for further assistance.

Removing the Duo Upgrade

This chapter describes the removal of the hardware portion of the Silicon Graphics Octane2 Duo upgrade.

There is no need to remove the software portion of the Duo upgrade. It may easily be deactivate, as described in "Configuring a Duo System to Function as a Dual Head System" on page 34.

Note: If you simply wish to use a Duo system as a Dual Head, single-user system—whether on a temporary or a long-term basis—there is no need to remove the hardware. You may simply deactivate the Duo software, as described in "Configuring a Duo System to Function as a Dual Head System" on page 34, and disconnect the secondary keyboard and mouse.

The removal process consists of the following sections:

- "Preparing the Workstation for the Removal" on page 42
- "Removing the Option Drive" on page 43
- "Removing the Additional System Memory" on page 44
- "Removing the PCI Module and PCI Card" on page 46

This chapter relies heavily on your *Octane2 Workstation Owner's Guide*. Make sure you have it handy before proceeding with the removal.

Preparing the Workstation for the Removal

Before installing or removing any hardware, you should first perform a complete backup of your system.

After making a backup you should shut down the operating system and power off the workstation.

The memory, PCI module, and PCI card removal require the use of the static dissipating wrist strap that came with your upgrade kit.

Removing the Option Drive

The instructions for removing an internal drive may be found in Chapter 7, "Installing and Removing Internal Drives and Front Module Parts," in your *Octane2 Workstation Owner's Guide.* The steps involved in the process are outlined below, along with references to specific portions of Chapter 7 in your *Octane2 Workstation Owner's Guide.*

Caution: If you added new users' home directories, moved home directories of existing users, or configured swap space to the option drive, or if you used the option drive for any other purpose, removing it may make your system completely or partially unusable.

Note: You should unmount the option drive before removing it. Go to **Toolchest** > **System** > **System Manager** > **Hardware and Devices** > **Disk Manager**. Select the drive you wish to unmount, click the **Unmount** button, and follow the directions.

To remove the option drive, follow these steps:

1. Shut down and power off your workstation, as described on page 161 of your *Octane2 Workstation Owner's Guide*.

2. Remove the lock bar and the front bezel from your workstation, as described on pages 162 through 164 of your *Octane2 Workstation Owner's Guide*.

3. Remove the drive that was installed as part of the Duo upgrade (it will be in either the middle bay or the upper bay), as described on pages 170 and 171 of your *Octane2 Workstation Owner's Guide*.

   Note: The lower bay is used for the system drive, and should be left in place.

   ---

4. Reinstall the appropriate blank panel (that is, the middle or upper one) in the front bezel, as described on pages 171 and 172 of your *Octane2 Workstation Owner's Guide*.

5. Reinstall the front bezel and the lock bar, as described on pages 195 and 196 of your *Octane2 Workstation Owner's Guide*.

6. Power on your workstation, as described on page 197 of your *Octane2 Workstation Owner's Guide*.

Your additional hard disk drive is now removed.

Removing the Additional System Memory

The instructions for removing the additional system memory may be found in Chapter 2, "Installing and Removing the CPU and Memory," in your *Octane2 Workstation Owner's Guide.* The steps involved in the process are outlined below, along with references to specific portions of Chapter 2 in your *Octane2 Workstation Owner's Guide.*

To remove the additional memory, follow these steps:

1. Shut down and power off your workstation, as described on page 32 of your *Octane2 Workstation Owner's Guide.*

2. Remove the lock bar from your workstation, as described on page 33 of your *Octane2 Workstation Owner's Guide.*

3. Remove the cables from your workstation system module, as described on page 34 of your *Octane2 Workstation Owner's Guide.*

    Note: Make a note of the location of each of the cables in order to facilitate their reconnection.

4. Attach a wrist strap to your wrist and to a ground, as described on page 35 of your *Octane2 Workstation Owner's Guide.*

    Caution: The components inside your workstation are extremely sensitive to static electricity. Always wear a wrist strap when you replace parts inside your workstation.

5. Remove the system module, as described on pages 36 through 40 of your *Octane2 Workstation Owner's Guide.*

    Caution: Be sure to place a cap over each of the two compression connectors on the system module, as described on page 40 of your *Octane2 Workstation Owner's Guide.* For more information about compression connectors, refer to Appendix A, "Care and Cleaning of Compression Connectors", in this manual.

6. Remove the memory that was installed as part of the Duo upgrade, as described on pages 47 through 52 of your *Octane2 Workstation Owner's Guide.*

7. Reinstall the system module, as described on pages 53 through 56 of your *Octane2 Workstation Owner's Guide*.

8. Reconnect the cables to the system module, as described on page 57 of your *Octane2 Workstation Owner's Guide*.

9. Reinstall the lock bar, as described on page 59 of your *Octane2 Workstation Owner's Guide*.

10. Power on your workstation, as described on page 58 of your *Octane2 Workstation Owner's Guide*.

11. Verify the new (smaller) amount of memory, as described on page 60 of your *Octane2 Workstation Owner's Guide*.

Your additional system memory is now removed.

Removing the PCI Module and PCI Card

The instructions for installing the PCI card and PCI module may be found in Chapter 4, "Installing and Removing PCI Boards," in your *Octane2 Workstation Owner's Guide.* The steps involved in the process are outlined below, along with references to specific portions of Chapter 4 in your *Octane2 Workstation Owner's Guide.*

Note: In addition to the mouse and keyboard port, the Duo PCI card contains an Ethernet port. If you were using the Ethernet port, removing the Duo PCI card could affect your system connectivity and operation.

Note: Before removing the PCI module, you should verify that it does not contain any PCI cards other than the Duo PCI card.

To remove the PCI card and PCI module, follow these steps:

1. Shut down and power off your workstation, as described on page 72 of your *Octane2 Workstation Owner's Guide*.

2. Attach a wrist strap to your wrist and to a ground, as described on page 74 of your *Octane2 Workstation Owner's Guide*.

   Caution: The components inside your workstation are extremely sensitive to static electricity. Always wear a wrist strap when you replace parts inside your workstation.

3. Remove the PCI module from the Octane2 chassis, as described on pages 75 through 78 of your *Octane2 Workstation Owner's Guide*.

   Caution: Be sure to place a cap over the compression connector on the PCI module, as described on page 77 of your *Octane2 Workstation Owner's Guide*. For more information about compression connectors, refer to Appendix A, "Care and Cleaning of Compression Connectors", in this manual.

4. Open the PCI module, as described on page 78 of your *Octane2 Workstation Owner's Guide*.

5. Remove the PCI board, as described on pages 89 through 93 of your *Octane2 Workstation Owner's Guide*.

   Place the PCI board in a static bag for safe storage.

6. Install the PCI module blanking panel using the two screws that held the PCI module in place.

7. Power on your workstation, as described on page 104 of your *Octane2 Workstation Owner's Guide*.

Your PCI card and PCI module are now removed.

Care and Cleaning of Compression Connectors

The Silicon Graphics Octane2 workstation uses compression connectors to connect several modules and boards to the frontplane.

A single compression connector is used in the Octane2 workstation:

- On the back of the PCI module
- On each XIO board on the XIO module

Two compression connectors are used on the system module.

The compression connector has 96 pads that enable passage of signals between the system (via the frontplane) and the system module, PCI module, or XIO board.

The compression connector has two halves: One half is located on the frontplane of the chassis; the other, on the system module, PCI module, or XIO board. Each pad on a frontplane connector is a flat, gold-plated surface. Each pad on the system module, PCI module, or XIO board is composed of hundreds of tiny bristles (dendrites), as shown in Figure A-1. When a bristled pad is pressed into a gold-plated pad, a connection is created for one signal.
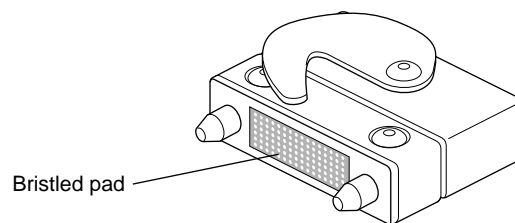

Bristled pad

Figure A-1   Identifying the Bristled Pad of the Compression Connector

The bristled pads may attract and hold dust, lint, grease, powder, and dirt. The presence of these substances clogs or damages the bristles and prevents them from making proper contact with the gold-plated pads on the system's frontplane. It is important to prevent this.

Guidelines for Storing and Handling Compression Connectors

To avoid damaging a compression connector and to keep it in optimal working condition, follow these guidelines whenever the board is not installed in the chassis.

Caution: Failure to follow these instructions can result in irreparable damage to the surface of the connector's pads, which may result in intermittent or complete failure of the product.

- Do not wipe or touch the pads of the compression connector with anything (no human fingers, no brushes, no cloth, no probes), except as specified in the cleaning instructions. The bristles might be damaged.

- Whenever the module or board is not in the chassis, put the protective cap over the compression connector and put the module or board in an antistatic bag. Make sure to close (fold over) the open end of the bag to minimize exposure to dust and atmospheric gases.

- Do not put anything (not even water) onto the pads, except as specified in the cleaning instructions.

- Before laying the board on a surface, make sure that the surface is free of dust, lint, powder, metal filings, oil, water, and so on.

- Do not blow dust, dirt, or powder anywhere near the board when it is not inside its protective bag.

Guidelines for Cleaning Compression Connectors

A compression connector should never need to be cleaned if you keep the protective cover on whenever the module or board is not in the chassis. However, if the connector becomes dirty, follow the instructions below for removing pollutants.

Note: Some pollutants can irreversibly damage (corrode or chemically alter) the pad surfaces. Although cleaning may remove the pollutant, it does not repair damage incurred by this contact.

To remove pollutants, follow these instructions:

1. Obtain a can of dry compressed air or inert gas. The Envi-ro-tech Duster 1671 product manufactured by Techspray (telephone 806 372 8523) works extremely well for this application.

   Caution: Do not use a cleaning product that contains any of the following ingredients: halogenated hydrocarbons, aromatic hydrocarbons, ethers, sulfur, ketones, or solvents of any kind. These substances cause irreparable damage to the connector's surface.

2. Prepare the can for use, as instructed on the can. For example, if a tube is provided, attach it to the can's dispensing mechanism.
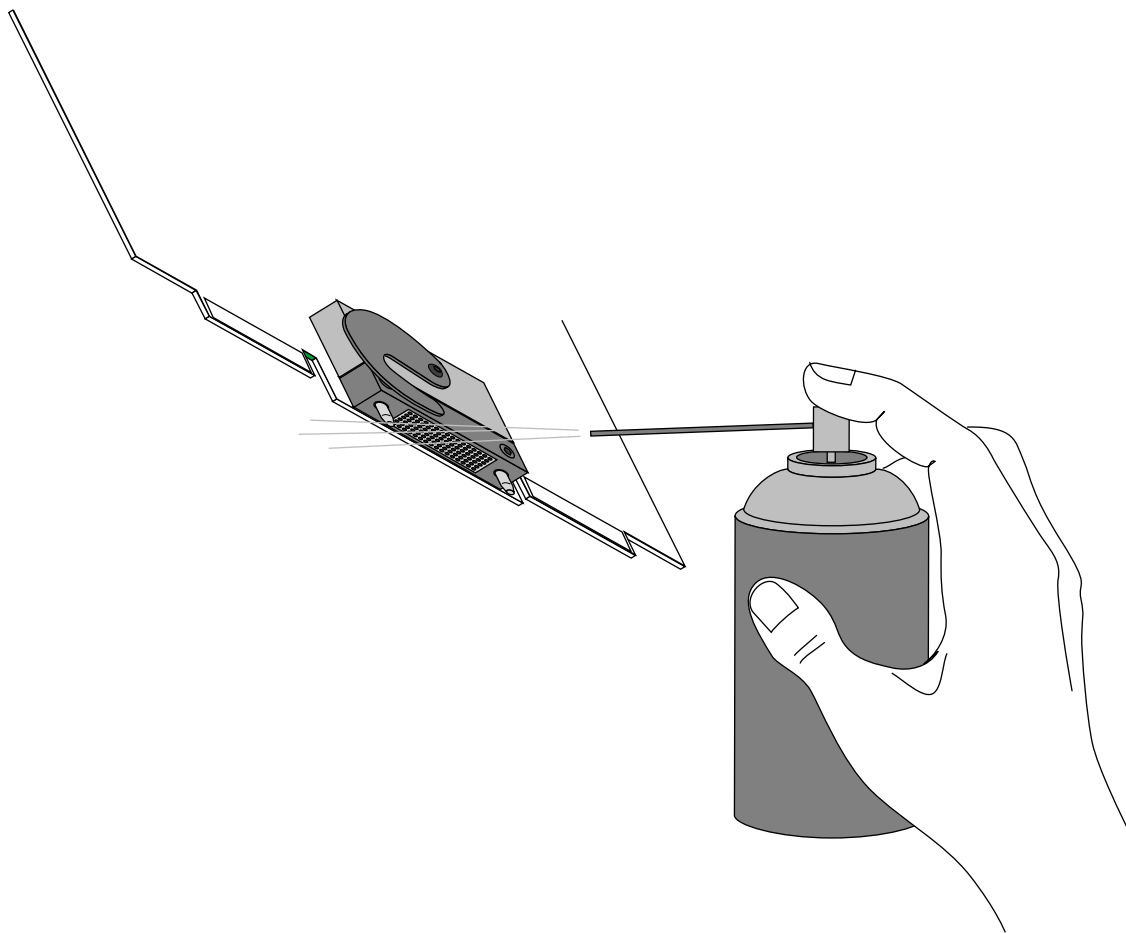
Figure A-2   Spraying the Compression Connector

3. Hold the can in a vertical position.

4. Place or hold the XIO board so that the rounded edge of the compression connector faces up. Note that the rounded edge is completely closed, so that air cannot flow into the connector, whereas the squared edge has an opening.

Caution: Spraying into the squared (open) edge of the connector can destroy it.

---

5. Position the XIO board at an angle to the can, so that the tip of the can's applicator is 1 to 2 inches away from the first (topmost) row of pads. Do not allow the applicator to touch the pads. When you spray, the air hits each pad and flows downward.

6. Start spraying. As you spray, move the spray along the length of the connector until the entire length has been sprayed. Move down a few rows and again spray along the entire length.

Note: Do not shake the can. Stop spraying if any visible material (for example, foam) appears. This foam will blow away once you resume spraying just air.

7. Repeat until all the pads have been sprayed.

8. When you finish, cover the compression connector with its cap or immediately install the board in an XIO slot.

Choosing a Graphics Head (for Developers)

This appendix provides a brief overview of library routines that developers may need in order to make applications work on a Dual Head system. For more information about the routines mentioned, see the appropriate man pages.

Note that once you open a window on a given head, the user cannot move it to the other head via the window manager; if you want users to be able to move windows from one head to another, your program must explicitly close the old window and open a new one on the other head.

Using Multiple Graphics Heads Under OpenGL, X, or Mixed-Model IRIS GL

OpenGL, X, and mixed-model IRIS GL all use X calls to choose on which screen to display; just pass the name of the desired display as the argument to `XOpenDisplay`(3X11). (Pass NULL as the display name if you want to default to the value of the `DISPLAY` environment variable.) You can then call `RootWindow`(3X11) with the newly opened display, specifying whichever screen you want; then call `XCreateWindow`(3X11) to create a window on the specified screen. After that, use the usual OpenGL or X calls, as appropriate, to draw or display in the window.

This is the syntax for `XOpenDisplay()`:

```
Display *XOpenDisplay(display_name)
     char *display_name;
```

For example, use the following code example to open a window on each head of a Dual Head system:

```c
#include <X11/Xlib.h>

#include <X11/Xutil.h>

#include <stdio.h>

void main(argc, argv)
int argc;
char **argv;
{
Display *display;

Window root0, root1, win0, win1;

    /* Open the display specified in the DISPLAY variable. */
    if ( (display = XOpenDisplay("")) == NULL )
        fprintf(stderr, "%s: cannot connect to X server.\n",
                argv[0]);

    /* Set up a root window for each screen. */
    root0 = RootWindow(display, 0);
    root1 = RootWindow(display, 1);

    /* Now create a window on each screen. */
    win0 = XCreateSimpleWindow(display, root0, 0, 0, 100,
                              100, 0, 0, 0);
    win1 = XCreateSimpleWindow(display, root1, 0, 0, 100,
                              100, 0, 0, 0);

    /* Display the windows and flush the output buffer. */
    XMapWindow(display, win0);
    XMapWindow(display, win1);
    XFlush(display);

    /* Leave them up for ten seconds before exiting. */
    sleep(10);
}
```

Using Multiple Heads Under IRIS GL

Under IRIS GL, you select a head on which to run a window by using the scrnselect(3G) function. If you do not call scrnselect() before opening a window using winopen(3G), the window opens on whichever screen the user has specified in the DISPLAY environment variable.

This is the syntax for scrnselect():

```
long scrnselect(gsnr)
    long gsnr;
```

where *gsnr* is the screen number relative to the current server—that is, 0 for screen :0.0 or 1 for :1.0.

Specifying Screen Adjacency

If you include system configuration files such as /usr/lib/X11/xdm/Xservers with your application, you may want to configure the layout of the heads, specifying which is on the left and which on the right. For information on how to specify adjacency, see the Xsgi man page, under the -hw option, or Chapter 2, "Duo Software Installation," in this guide.

Cabling and Configuring PCI Ethernet Boards

This appendix provides information to help you configure PCI boards in your Octane or Octane2 system and to determine how the ports on those boards will by identified by the software. Configuration resources are provided in the last section of this appendix.

About the `ioconfig.conf` File

The `ioconfig.conf` file records and saves option board and port information after the option board is installed in the Octane2 workstation. However, the file reserves the board and port spaces if the option board is removed, and assigns new logical controller numbers if the same type of board is inserted in a different PCI slot.

If you want a listing of only what is currently installed, remove the `ioconfig.conf` file and restart your system. The file is rebuilt with information about the current hardware configuration, reflecting what is currently installed.

Note: Rebuilding the `ioconfig.conf` file can change all of the maps between the logical controller numbers and the physical port locations, depending on whether option boards have been moved to different slots or removed from the system.

Removing the `ioconfig.conf` File

If you need to place the PCI board (Ethernet/keyboard/mouse) in a different slot, move the board to the new slot, and then remove the `ioconfig.conf` file. Removing the file erases the record of the previous location so that the system does not think two boards of the same type are installed. To remove the `iconfig.conf` file, follow these directions:

1. From **Toolchest** > **Desktop**, choose **Open UNIX Shell**.
2. Become superuser by typing **su**

3. Type: **rm /etc/ioconfig.conf**

4. Type: **exit** to exit superuser mode.

5. Restart the system. Restarting the system builds a new ioconfig.conf file.

Mapping the Logical Controller Numbers to the Physical Port Locations

Before you can connect cables, you need to map the logical port numbers to the physical port locations. Follow these instructions:

1. From the **Toolchest** > **Desktop**, choose **Open UNIX Shell**.

2. At the prompt, type: **cat /etc/ioconfig.conf**

3. Read the following table, descriptions, and explanations to determine the correct port location(s) for the cables you wish to connect.

   You see a listing similar to the following example.

Table C-1   Identification of Information in the ioconfig.conf File

Logical Controller #	Hard ware	Node	Bus Type	Physical XIO Slot ID	Bus Type	Slot ID	Port Type (Abbreviation)	Serial Port ID
2	/hw	/node	/xtalk	/13	/pci	/2	/scsi_ctlr	
0	/hw	/node	/xtalk	/13	/pci	/1	/rns	
2	/hw	/node	/xtalk	/13	/pci	/3	/pckb	
2	/hw	/node	/xtalk	/13	/pci	/3	/pcms	
1	/hw	/node	/xtalk	/13	/pci	/3	/ef	

Logical Controller Number Column

The Logical Controller Number is the number assigned to a port on an option board by the operating system. The logical controller numbers assigned by the operating system to a port on an option board always start higher than the last assigned port of the same type on the system module. Ports of the same type are assigned incrementing port numbers. For example, because there is one Ethernet port on the system module (which is assigned logical number 0) logical number 1 is assigned to the first optional Ethernet port that the software sees.

Hardware, Node, and Bus Type Columns

Ignore the Hardware, Node, and Bus Type columns containing XIO entries when looking for information in this table. They appear in the `ioconfig.conf` file to report that hardware is being probed, on one node, using XIO at one point and PCI at another within the workstation.

Physical XIO Slot ID Column
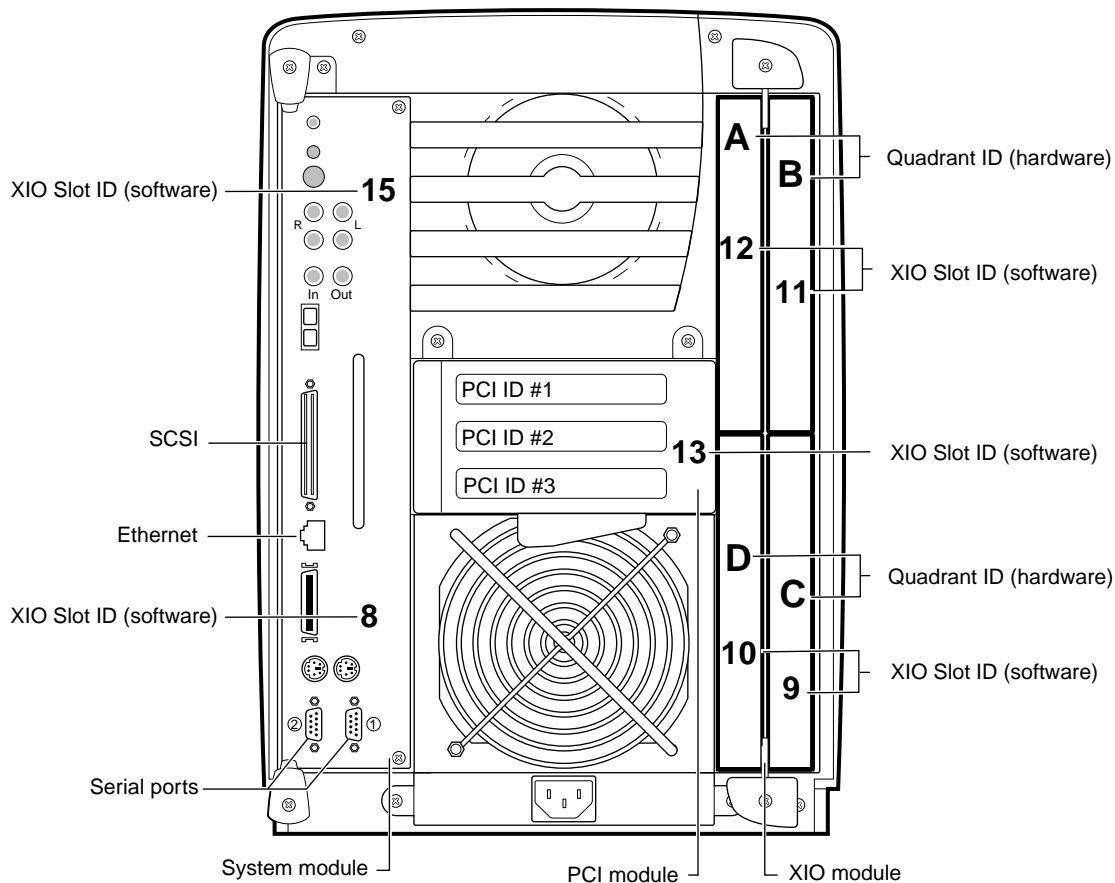
Figure C-1   Physical XIO Identification Numbers and Software Designations

Use Figure C-1 to determine the physical XIO Slot ID number. After the system module itself, the PCI module is the first XIO module probed. Its number is 13.

In a VPro Octane2 system, the primary graphics head occupies physical quadrants A and B, but only uses the XIO connector in slot B. Its location in software is therefore XIO Slot ID 11.

In a Dual Head VPro Octane2 system, the secondary graphics head occupies physical quadrants C and D, but only uses the XIO connector in slot D. Its location in software is therefore XIO Slot ID 10.

Note: Physical port numbers are assigned in XIO probing order, which starts at the highest XIO Slot ID and descends. For example, the Ethernet port on the system module (XIO Slot ID 15) will be assigned a logical number 0, before an Ethernet port on a board in the PCI module (XIO Slot ID 13) is assigned logical number 1, because XIO Slot ID 15 is probed before XIO Slot ID 13.

Table C-2 shows the XIO Slot IDs in numeric order and the device or location to which each is mapped.

Table C-2   XIO Slot ID Mapping

XIO Slot ID #	Device or Location
8	System module (heart chip)
9	XIO Quadrant C (lower right of XIO module)
10	XIO Quadrant D (lower left of XIO module)
11	XIO Quadrant B (upper right of XIO module)
12	XIO Quadrant A (upper left of XIO module)
13	PCI module
14	(not assigned)
15	System module (bridge chip: I/O functions)

Bus Type Column

The column that contains PCI entries should be read only in conjunction with the Physical XIO Slot ID column that comes before it. If the Physical XIO Slot ID number is 13, the board to which a logical controller number has been assigned is in the PCI module.

Slot ID Column

The Slot ID column refers to the physical location of the option board in the PCI module.

Again referring to the example shown in Table C-1, we see that all entries in this table have physical XIO Slot ID number 13, which means they are all in the PCI module.

We can see that the first listing is a board in PCI slot 2 (the Slot ID column contains a 2), and that this board has one port, abbreviated scsi_ctrl (which means this is a SCSI controller port).

The second listing is a board in PCI slot 1 (the Slot ID column contains a 1). This board has one port, abbreviated rns (which, as we'll see later, is an FDDI or CDDI port).

The third, fourth and fifth listings are a single board in PCI slot 3 (the Slot ID column for all three entries contains a 3). This board has three ports, abbreviated pckb, pcms, and ef (which, as we'll see later, are keyboard, mouse, and Ethernet ports, respectively).

Figure C-2 shows the location of each of the slots in the PCI module.
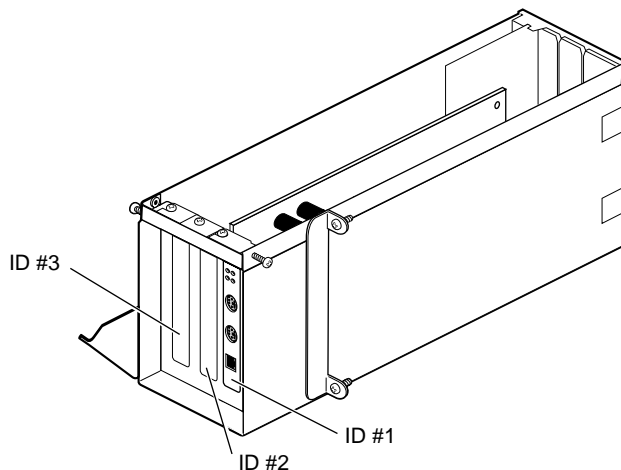
Figure C-2   PCI Module Slot Numbers

Port Type Column

Table C-3 lists the port type abbreviations and their definitions.

Table C-3   Port Type Abbreviations and Definitions

Abbreviation	Definition
ef	Ethernet
rns	FDDI or CDDI
pckb	keyboard
pcms	mouse
tty	serial
scsi_ctlr	SCSI controller

Serial Port ID Column

Because each pair of XIO serial ports share a bus, this column identifies which XIO serial port is on which bus.

After Installing the Board and Cables

When the board is installed and connected and the Octane2 workstation is powered on, use the following information for configuration.

Certain PCI boards require some configuration, others do not. Use the table below to determine whether you need to configure the board.

Table C-4   Determining Which Boards to Configure

Configuration Needed	Configuration Not Needed
All networking boards	Mouse, keyboard, SCSI, Radical

Refer to the *Personal System Administration Guide* or *IRIX Admin: Networking and Mail* for instructions on configuring software. Both documents are online and accessible from **Toolchest** > **Help** > **Online Books**. The *Personal System Administration Guide* is under **SGI End User**, and the *IRIX Admin: Networking and Mail* guide is under **SGI Admin**.

Index