Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

Notes, Notices, and Cautions

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

⚠️ **CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.**

Abbreviations and Acronyms

For a complete list of abbreviations and acronyms, see the "Glossary" in the *User's Guide*.

DIP Switch Settings and Connectors

Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

- DIP Switch Settings—A General Explanation
- Server Module Board DIP Switch
- Server Module Board Connectors
- Disabling a Forgotten Password

This section provides detailed information about the sever-module board DIP switch settings. It also provides some basic information on switches and describes the connectors on the various boards in the system.

DIP Switch Settings—A General Explanation

DIP switches provide a convenient and reversible way of reconfiguring the circuitry on a printed circuit board. When reconfiguring the system, you may need to change DIP switch settings on circuit boards or drives.

DIP Switches

DIP switches are small blocks on a circuit board with one or more slide switches emerging from them. Each slide switch on the DIP switch is designated by a number. To change a DIP switch setting, move the appropriate slide switch to either the "on" or "off" position. Figure A-1 shows an example of a DIP switch.

Figure A-1. Example DIP Switch
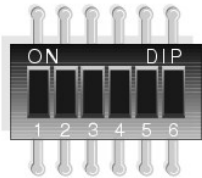
Figure A-2 shows the location and default settings of the sever-module board DIP switch. See Table A-1 for information about the DIP switch designations, default settings, and functions.

Server Module Board DIP Switch

⚠️ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

Figure A-2 shows the location of the configuration DIP switch on the server module board. Table A-1 lists the settings for the DIP switch.

📝 **NOTE:** Figure A-2 is oriented as viewed from the front of the server module.

Figure A-2. Server Module Board DIP Switch
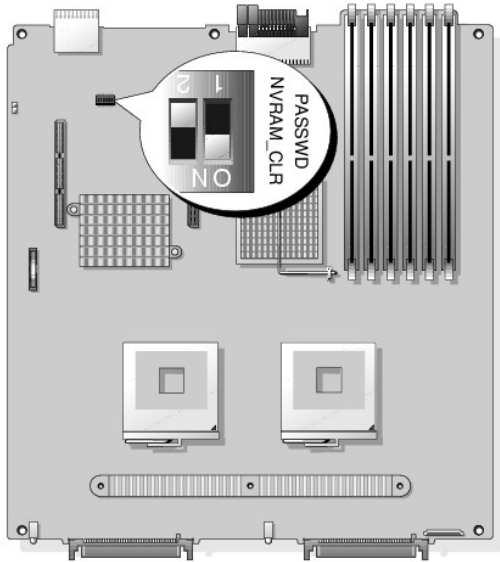
Table A-1. Server-**Module DIP Switch Settings**

DIP Switch	Setting	Description
PASSWD (Switch 1)	(default)	The password feature is enabled when switch 1 is set to "on."
		The password feature is disabled when switch 1 is set to "off."
NVRAM_CLR (Switch 2)	(default)	The configuration settings in NVRAM are retained at system boot when switch 2 is set to "off."
		The configuration settings in NVRAM are cleared at next system boot when switch 2 is set to "on."
"on" "off"		

Server Module Board Connectors

See Figure A-3 and Table A-2 for the location and description of server module board connectors.

Figure A-3. Server Module Board Connectors

PASSWD (switch 1) CON2 CON1
NVRAM_CLR (switch 2) DIMM 1_B
J14 DIMM 1_A
J19 DIMM 2_B
J20 DIMM 2_A
  DIMM 3_B
  DIMM 3_A
BT1
PROC_1
  PROC_2
HDD1 HDD0 J16
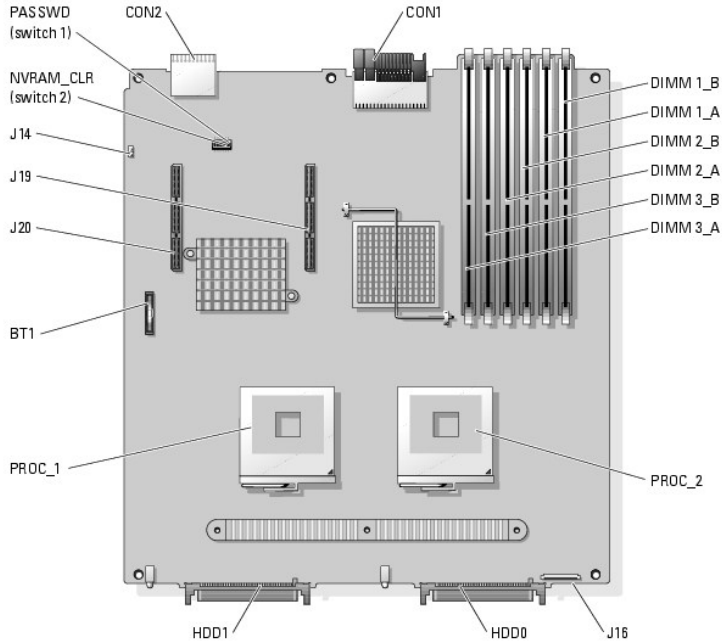
Table A-2. Server Module Board Connectors

Connector	Description
BT1	System battery
CON*n*	Midplane connectors 1 and 2
PROC_*n*	Microprocessor sockets 1 and 2
DIMM *n*_X	Memory modules (6), where X is the channel and *n* is the bank
HDD*n*	SCSI hard drive connectors
J14	BMC recovery jumper **NOTE:** Do not use the BMC recovery jumper unless instructed to do so by a Dell technical support representative.
J16	Front control panel connector
J19, J20	Daughter card connectors
PASSWD	password switch 1
NVRAM_CLR	clear NVRAM switch 2

Disabling a Forgotten Password

The server module's software security features include a system password and a setup password, which are discussed in detail in "Using the System Setup Program" in your *User's Guide.* The password switch 1 on the configuration DIP switch enables these password features or disables them and clears any password(s) currently in use.

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Remove the server module. See "Removing a Server Module" in "Installing System Options."

2. Open the server module. See "Opening the Server Module" in "Installing System Options."

3. If a daughter card is installed on the server module board, remove the daughter card. See "Removing a Daughter Card" in "Installing System Options."

4. Use a small plastic scribe to move the password switch 1 to the "off" position.

   See to locate the password switch 1 on the server module board.

5. If you removed a daughter card from the server module board, reinstall it. See "Installing a Daughter Card" in "Installing System Options."

6. Close the server module. See "Closing the Server Module" in "Installing System Options."

7. Install the server module. See "Installing a Server Module" in "Installing System Options."

   When the server module is on, the power-on indicator is solid green. Allow the server module to finish booting.

   The existing passwords are not disabled (erased) until the system boots with the password switch 1 to the "off" position. However, before you assign a new system and/or setup password, you must move the password switch 1 to the "on" position.

   NOTE: If you assign a new system and/or setup password with the switch 1 still in to the "off" position, the system disables the new password(s) the next time it boots.

8. Remove the server module. See "Removing a Server Module" in "Installing System Options."

9. Open the server module. See "Opening the Server Module" in "Installing System Options."

10. If a daughter card is installed on the server module board, remove the daughter card. See "Removing a Daughter Card" in "Installing System Options."

11. Use a small plastic scribe to move the password switch 1 to the "on" position.

    See to locate the password switch 1 on the server module board.

12. If you removed a daughter card from the server module board, reinstall it. See "Installing a Daughter Card" in "Installing System Options."

13. Close the server module. See "Closing the Server Module" in "Installing System Options."

14. Install the server module. See "Installing a Server Module" in "Installing System Options."

15. Assign a new system and/or setup password.

    To assign a new passwords using the System Setup program, see your *User's Guide*.

I/O Ports and Connectors

Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

- I/O Connectors
- DRAC/MC Module
- Keyboard/Video/Mouse (KVM) Switch Module Custom Cable
- Front-Panel Keyboard/Video/Mouse (KVM) Module
- PowerConnect 5316M Ethernet Switch Module
- Gb Ethernet Pass-through Module
- Fibre Channel Pass-through Module and Fiber Channel Switch Module

I/O Connectors

I/O connectors are the gateways that the system uses to communicate with external devices, such as a keyboard, mouse, or monitor. This section describes the various connectors that, depending on your purchase, may be on your system. If you reconfigure the hardware connected to the system, you may also need the pin number and signal information for these connectors.

Table B-1 shows the icons used to label the connectors on the system.

Table B-1. I/O Ports and Connectors Icons

Icon	Ports and Connectors
IOIOI	Serial port
▱	Mouse connector
▥	Keyboard connector
▭	Video connector
⟜	USB connector
⬡	10/100 Ethernet management port and 10/100/1000 Ethernet port

DRAC/MC Module

Serial Connector

The DRAC/MC module serial connector uses a 9-pin D-subminiature connector. See the documentation for the DRAC/MC controller for information on using the serial port for configuration.

Figure B-1 illustrates the pin numbers for the serial connector and Table B-2 defines the pin assignments for the connector.

NOTE: Ensure that you use a null-modem cable between the DRAC/MC module serial connector and the attaching serial device.

Figure B-1. Serial Connector Pin Numbers
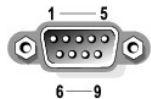
Table B-2. Serial Connector Pin Assignments

Pin	Signal	I/O	Definition
1	DCD	I	Data carrier detect
2	SIN	I	Serial input
3	SOUT	O	Serial output
4	DTR	O	Data terminal ready

5	GND	N/A	Signal ground
6	DSR	I	Data set ready
7	RTS	O	Request to send
8	CTS	I	Clear to send
9	RI	I	Ring indicator
Shell	N/A	N/A	Chassis ground

10/100 Management Port

The DRAC/MC module's 10/100 management port allows you to manage the server modules. <u>Figure B-2</u> illustrates the pin numbers for the management port and <u>Table B-3</u> defines the pin assignments for the port.

Figure B-2. 10/100 Management Port
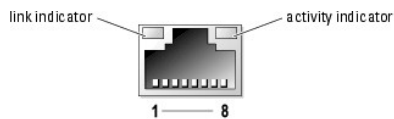
Table B-3. 10/100 Management Port Pin Assignments

Pin	Signal	I/O	Definition
1	TD+	O	Data out (+)
2	TD−	O	Data out (−)
3	RD+	I	Data in (+)
4	NC	N/A	No connection
5	NC	N/A	No connection
6	RD−	I	Data in (−)
7	NC	N/A	No connection
8	NC	N/A	No connection

Keyboard/Video/Mouse (KVM) Switch Module Custom Cable

PS/2-Compatible Keyboard and Mouse Connectors

The PS/2-compatible keyboard and mouse cables attach to 6-pin, miniature DIN connectors on either the front- or back-panel custom cable. <u>Figure B-3</u> illustrates the pin numbers for these connectors and <u>Table B-4</u> defines the pin assignments for these connectors.

Figure B-3. Keyboard and Mouse Connector Pin Numbers

Table B-4. Keyboard and Mouse Connector Pin Assignments

Pin	Signal	I/O	Definition
1	KBDATA or MFDATA	I/O	Keyboard data or mouse data
2	NC	N/A	No connection
3	GND	N/A	Signal ground
4	FVcc	N/A	Fused supply voltage
5	KBCLK or MFCLK	I/O	Keyboard clock or mouse clock
6	NC	N/A	No connection
Shell	N/A	N/A	Chassis ground

Video Connector

You can attach a VGA-compatible monitor to the server module's integrated video controller using a 15-pin high-density D-subminiature connector on either the front- or back-panel custom cable. Figure B-4 illustrates the pin numbers for the video connector and Table B-5 defines the pin assignments for the connector.

Figure B-4. Video Connector Pin Numbers
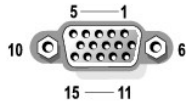
Table B-5. Video Connector Pin Assignments

Pin	Signal	I/O	Definition
1	RED	O	Red video
2	GREEN	O	Green video
3	BLUE	O	Blue video
4	NC	N/A	No connection
5–8, 10	GND	N/A	Signal ground
9	VCC	N/A	Vcc
11	NC	N/A	No connection
12	DDC data out	O	Monitor detect data
13	HSYNC	O	Horizontal synchronization
14	VSYNC	O	Vertical synchronization
15	NC	N/A	No connection

Front-Panel Keyboard/Video/Mouse (KVM) Module

USB Connector

The front-panel custom cable provides a USB connector that supports USB-compliant devices such as diskette drives and CD drives (supplied by Dell). Figure B-5 illustrates the pin numbers for the USB connector and Table B-6 defines the pin assignments for the connector.

Figure B-5. USB Connector Pin Numbers

Table B-6. USB Connector Pin Assignments

Pin	Signal	I/O	Definition
1	Vcc	N/A	Supply voltage
2	DATA +	I	Data in
3	DATA −	O	Data out
4	GND	N/A	Signal ground

Video Connector

See "Video Connector" in "Back-Panel Keyboard/Video/Mouse (KVM) Module."

PowerConnect 5316M Ethernet Switch Module

PowerConnect 5316M Ethernet Port

The system's PowerConnect 5316M Ethernet switch module's Ethernet ports provide fast uplink communications between servers and workstations. Figure B-6 illustrates the pin numbers for the ports and Table B-7 defines the pin assignments for the ports.

Figure B-6. PowerConnect 5316M Ethernet Port
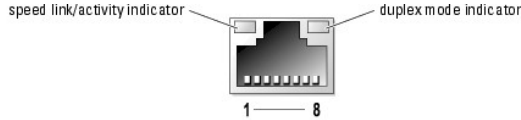
Table B-7. PowerConnect 5316M Ethernet Port Pin Assignments

Pin	Signal	I/O	Definition
1	TRDB+	IO	Transmit/receive data B+
2	TRDB−	IO	Transmit/receive data B−
3	TRDA+	IO	Transmit/receive data A+
4	TRDD+	IO	Transmit/receive data D+
5	TRDD−	IO	Transmit/receive data D−
6	TRDA−	IO	Transmit/receive data A−
7	TRDC+	IO	Transmit/receive data C+
8	TRDC−	IO	Transmit/receive data C−

Gb Ethernet Pass-through Module

Gb Ethernet Pass-through Ethernet Port

The system's Gb Ethernet pass-through module's Ethernet ports provide fast communications between servers and workstations. Figure B-7 illustrates the pin numbers for the ports and Table B-8 defines the pin assignments for the ports.

Figure B-7. Gb Ethernet Pass-through Ethernet Port
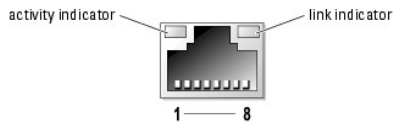
Table B-8. Gb Ethernet Pass-through Ethernet Port Pin Assignments

Pin	Signal	I/O	Definition
1	TRDB+	IO	Transmit/receive data B+
2	TRDB−	IO	Transmit/receive data B−
3	TRDA+	IO	Transmit/receive data A+
4	TRDD+	IO	Transmit/receive data D+
5	TRDD−	IO	Transmit/receive data D−
6	TRDA−	IO	Transmit/receive data A−
7	TRDC+	IO	Transmit/receive data C+
8	TRDC−	IO	Transmit/receive data C−

Ethernet Network Cable Requirements

The network switch module supports a UTP Ethernet cable equipped with a standard RJ45-compatible plug. Observe the following cabling restrictions.

NOTICE: To avoid line interference, voice and data lines must be in separate sheaths.

l Use Category 5 or greater wiring and connectors.

l Do not exceed a cable run length (from a workstation to a hub) of 100 m (328 ft).

NOTE: The cable used for the analog rack interface port is limited to 15.24 m (50 ft).

For detailed guidelines on operation of a network, see "Systems Considerations of Multi-Segment Networks" in the IEEE 802.3 standard.

Fibre Channel Pass-through Module and Fiber Channel Switch Module

The system's Fibre channel pass-through and switch module's Short Wave Small Form Factor Pluggable (SFP) ports provide fast communications between servers and workstations. The ports do not contain pins and pin signals—they each contain an optical transceiver for the optical cable. See Figure B-8.

Figure B-8. Fibre Channel Pass-through Port (Typical)

Introduction

Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

● Other Documents You May Need
● Obtaining Technical Assistance

The system includes the following service features to help make troubleshooting and repair easy and effective:

l   Dell™ Remote Access Controller/Modular Chassis (DRAC/MC) hardware, which monitors temperatures and voltages throughout the system and notifies you if the system overheats, if a system cooling fan malfunctions, or if a power supply module fails

l   Hot-pluggable redundant cooling fan modules

l   Hot-pluggable (optional) power supply modules

l   Hot-pluggable DRAC/MC module

l   Hot-pluggable keyboard/video/mouse (KVM) module

l   System diagnostics, which checks for hardware problems (if the server module can boot)

Upgrade options are offered, including:

l   A variety of options for redundant I/O connectivity including Ethernet switch modules, Gb Ethernet pass-through modules, Fibre-Channel pass-through modules, and supporting daughter cards

l   An additional microprocessor

l   Additional system memory

l   Additional hard drives

l   Additional power supply modules

l   USB CD drive

l   USB diskette drive

Other Documents You May Need

⚠ The *Product Information Guide* provides important safety and regulatory information. Warranty information may be included within this document or as a separate document.

Dell continues to offer new types of connectivity modules for your system and provides documentation on how to set up and use them. The documentation for a particular module is included with the module product or is available at **support.dell.com**.

📝 **NOTE:** Ensure that you also refer to **support.dell.com** for any updates to the documentation that you received with your module.

l   The *Getting Started Guide* provides an overview of initially setting up your system.

l   The *User's Guide* provides an overview of the system, descriptions of the Dell OpenManage™ Server Assistant and the System Setup program, and technical specifications.

l   The *Rack Installation Guide* or *Rack Installation Instructions* included with your rack solution describes how to install your system into a rack.

l   The *Dell PowerEdge Expandable RAID Controller 4/im Integrated Mirroring Guide* describes using the integrated mirroring features.

l   The network switch module documentation describes the features and how to use the network switch modules.

l   The *Dell OpenManage Server Assistant User's Guide* provides detailed information on the systems management software applications, as well as information on alternative upgrade paths.

l   Systems management software documentation describes the features, requirements, installation, and basic operation of the software.

l   Baseboard management controller (BMC) documentation describes the features and configuration options of the BMC.

l   Operating system documentation describes how to install (if necessary), configure, and use the operating system software.

l   Documentation for any components you purchased separately provides information to configure and install these options.

l   Updates are sometimes included with the system to describe changes to the system, software, and/or documentation.

📝 **NOTE:** Always check for updates on **support.dell.com** and read the updates first because they often supersede information in other documents.

l   Release notes or readme files may be included to provide last-minute updates to the system or documentation or advanced technical reference material intended for experienced users or technicians.

Obtaining Technical Assistance

If at any time you do not understand a procedure described in this guide or if your system does not perform as expected, a number of tools are provided to help you. For more information on these help tools, see "Getting Help."

Indicators, Codes, and Messages

Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

- System Overview
- System Status Features
- Server Module Features
- Hard-Drive Features
- Back-Panel Features
- KVM Modules
- DRAC/MC Module
- I/O Connectivity
- Server Module Messages
- Server Module Beep Codes
- Warning Messages
- Diagnostics Messages
- Alert Messages

Applications, operating systems, and the system itself are capable of identifying problems and alerting you to them. When a problem occurs, a message may appear on the monitor or a beep code may sound.

A variety of messages can indicate when the system is not operating properly:

- ı Server module messages

- ı Dell™ Remote Access Card/Modular Chassis (DRAC/MC) module messages

- ı Server module beep codes

- ı Warning messages

- ı Diagnostics messages

- ı Alert messages

The system indicators and the front- and back-panel features are illustrated in this section. This section also describes each type of message and lists the possible causes and actions you can take to resolve any problems indicated by a message.

System Overview

Your system can include up to ten server modules (or blades). Each server module functions as an individual server encompassing up to two microprocessors, up to two hot-pluggable hard drives, and up to six memory modules (see Figure 2-1). To function as a system, a server module is inserted into a chassis that supports power supplies, fan modules, a management module (Dell Remote Access Controller/Modular Chassis [DRAC/MC]), a KVM switch module, and at least one I/O module for network connectivity. The power supplies, fans, DRAC/MC, and I/O modules are shared resources of the server modules in the chassis. In addition, your system may also ship with an optional external USB diskette drive and an optional external USB CD drive, which you can use to set up and configure the server modules.

NOTE: To ensure proper operation and cooling, all bays must be populated at all times with either a server module or with a blank.

Figure 2-1. System Overview
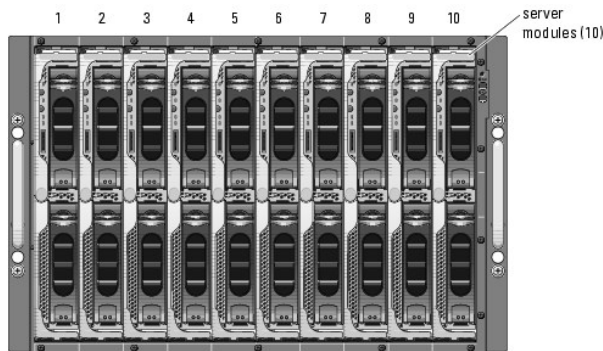
This section describes the major hardware and software features of your system and provides information about the indicators on the system's front and back panels. It also provides information about other documents you may need when setting up your system and how to obtain technical assistance.

System Status Features

The chassis has front-panel control features including power and identification buttons and indicators (see Figure 2-2). Press the power button to turn on the system; press and hold the power button to turn off the system. Pressing the identification button activates the identification indicator on both the front and back (on the KVM module) of the system. Table 2-1 shows the status features.

Figure 2-2. Front-Panel Control and Indicators
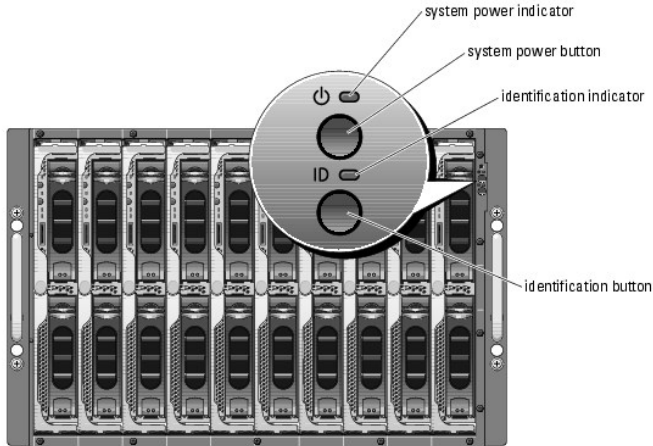
Table 2-**1. System Status Features**

Indicator Type	Icon	Indicator	Indicator Code
System power button	N/A	None	Turns the system on and off. Press to turn on the system. Press and hold to turn off the system. Hold briefly to perform a graceful shutdown of the server modules.
			NOTE: The system power button controls power to all of the server modules and I/O modules in the chassis.
System power indicator	⏻	Off	System does not have power.
		Green	System power is on.
		Amber	System is plugged in but is not turned on.
Identification button	N/A	None	Turns on the identification indicators on both the front and back (on the KVM switch module) of the chassis.
Identification indicator	ⓘ	Off	Chassis is not being identified. This is the default.
		Amber, slow blinking	Chassis is being identified. Either the front or back identification button has been pressed. This indicator can be turned off by pressing the identification button.
		Amber, fast blinking	System error. Will stop blinking when the error is resolved.

Server Module Features

Each server module has one power button and one KVM module selection button on the front (see Figure 2-3). The indicators include a power indicator, network link indicators, and a KVM module indicator. The server module also has a custom port on the front of the module. Use the custom cable included with your system to connect this port to two USB devices (for example, USB diskette drive, USB CD drive, USB mouse) and to video.

NOTE: The USB devices can only be connected by using the custom cable supplied with the system.

Figure 2-3. Server Module Indicators

server module power indicator
server module power button
KVM selection indicator
KVM selection button
daughter card status indicator
Ethernet network indicator
custom port (with custom cable - USB [2] and video)
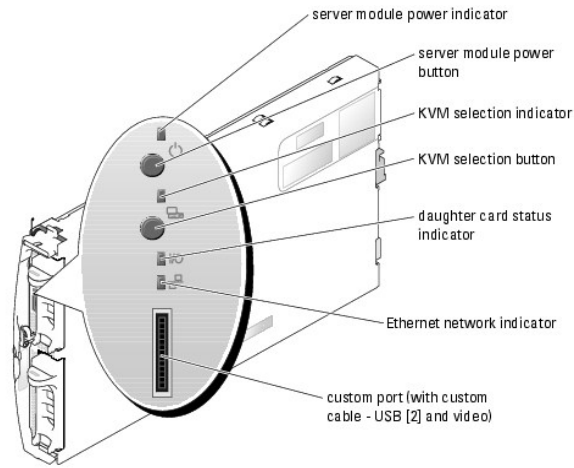
[Table 2-2](#) provides information about the status indicators.

Table 2-**2. Server Module Features and Indicators**

Indicator	Icon	Activity Indicator	Indicator Code
Server module power indicator	⏻	Off	Power is not available to the server module, the server module is not turned on, or the server module is installed incorrectly. For detailed information on installing a server module, see "[Server Modules](#)" in "Installing System Options."
		Green	The module is turned on.
		Green blinking fast	The module power is on and there is a fault with the server module.
		Green blinking slowly	The module power is on and the server module is being remotely identified via the DRAC/MC.
		Amber	The module power is off, but the system power is on.
		Amber blinking fast	The module power is off and there is a fault with the server module.
Server module power button	N/A	None	Turns server module power off and on. l If you turn off the module using the power button and the module is running an ACPI-compliant operating system, the module can perform an orderly shutdown before the power is turned off. l If the module is not running an ACPI-compliant operating system, power is turned off immediately after the power button is pressed. l Press and hold the button to turn off the server module immediately. The button is enabled in the System Setup program. When disabled, you can only use the button to turn on the server module.
KVM selection indicator	🖥	Off	The server module is not selected by the KVM.
		Green	The server module is selected for the KVM.
		Amber blinking	The server module is not selected by the KVM and a power fault exists. See "[Troubleshooting the Video Subsystem](#)," "[Troubleshooting the Keyboard](#)," "[Troubleshooting the Mouse](#)" in "Troubleshooting Your System."
		Green/amber blinking	The server module is selected for the KVM and a power fault exists. See "[Troubleshooting the Video Subsystem](#)," "[Troubleshooting the Keyboard](#)," "[Troubleshooting the Mouse](#)" in "Troubleshooting Your System."
KVM selection button	N/A	None	Selects the server module for use with the KVM located on the back of the system. See "[KVM Switch Module](#)" and "[Avocent Analog KVM Switch Module](#)" for information on selecting a server module by using the keyboard.
Daughter card status indicator (Infiniband card installed)	I/O	Off	Infiniband daughter card is not installed.
		Green	Infiniband daughter card is installed, but no traffic is detected.
		Green blinking	Infiniband daughter card is present and data transfers are occurring.
Daughter card status indicator (Fibre channel daughter card installed)	I/O	Off	Fibre channel daughter card is not installed.
		Green	A link exists.
		Green blinking	Fibre channel daughter-card data transfers are occurring.
Daughter card status indicator (**Gb Ethernet daughter card** installed)	I/O	Off	Gb Ethernet daughter card is not installed.
		Green	A link exists.
		Green blinking	Gb Ethernet daughter-card data transfers are occurring.

Network indicators	品	Off	Indicates that the server module does not have a link to the Ethernet switch or pass-through module.
		Green on	Indicates that the server module has a valid link to the network switch module.
		Green blinking	Indicates network activity between the server module and the network switch module.
			NOTE: External network activity is not reported by this indicator.
USB/video connector	⊡	None	Use the custom cable to connect external USB devices and video to the server module.
	⟻		

Using USB Diskette or USB CD Drives

Each server module has a USB port on the front of the server module which allows you to connect a custom cable for a diskette drive or USB CD drive. The USB drives are used to configure the server module.

NOTICE: The system only supports USB 1.1 drives designated by Dell for use with your system. The drive must be horizontal and level to operate properly.

NOTE: If the drive must be designated as the boot drive, enter the System Setup Program and set the drive as first in the boot sequence (see "Using the System Setup Program" in the *User's Guide*). Reset the power on the server module.

Hard-Drive Features

Each server module supports up to two hot-pluggable SCSI hard drives. If only one hard drive is used, a blank must be installed to maintain proper cooling. See Figure 2-4 and Table 2-3 for information on the hard-drive indicators. Different patterns are displayed as drive events occur in the system.

NOTE: Each server module must have a hard drive or a hard-drive blank installed in each hard-drive bay.

Figure 2-4. Hard-Drive Features and Indicators
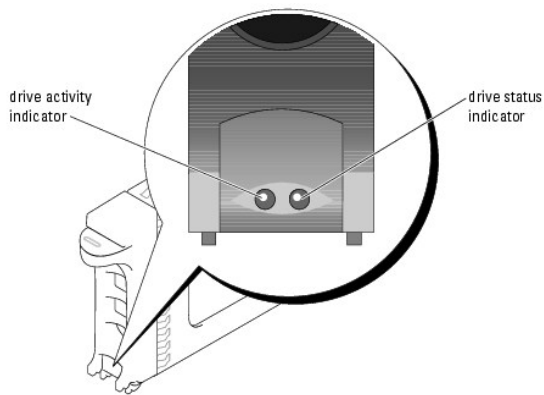
Table 2-3. Hard-Drive Status Indicator Patterns

Indicator	Activity Indicator	Indicator Code
Off	None	Power is off to the server module. Both the activity and status indicators are off.
Activity	Green	Shows drive activity.
Status	Amber	The rebuild of the drive has stopped or the drive has an error. See "Troubleshooting Hard Drives" in "Troubleshooting Your System."
	Amber, blinking slowly	Rebuilding of the drive is proceeding.
	Amber, blinking quickly	Drive is being identified.

Back-Panel Features

The back of the chassis supports four I/O module bays, the DRAC/MC, fan modules, and power supply modules. Figure 2-5 shows a sample configuration and the numbering for the bays. Table 2-4 provides information about the back-panel features.

Figure 2-5. Back-Panel Features
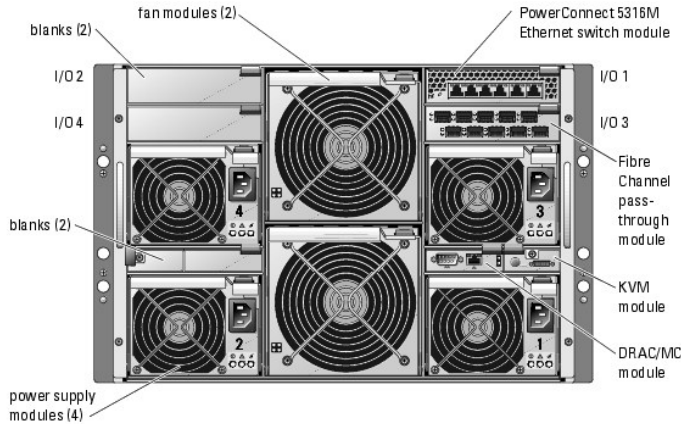
Table 2-4. Back-Panel Features and Indicators

Component	Indicator Description
Power supply modules	Provide information about power status (see "Power Supply Indicator Codes").
Fan modules	Provide information about status of the system fans (see "Fan Module Indicators").
KVM module	Provides information about the KVM module (see "KVM Modules").
DRAC/MC module	Provides information about system status, system management status, and port status (see "DRAC/MC Module").
PowerConnect™ 5316M Ethernet switch module	Provides information about the 10/100/1000 BASE-T network status (see "PowerConnect 5316M Ethernet Switch Module").
Fibre Channel pass-through module	Provides information about the Fibre Channel network status (see "Fibre Channel Pass-Through Module").
Fibre Channel switch module	Provides information about the Fibre Channel network status (see "Fibre Channel Switch Module").
Infiniband pass-through module	Provides information about the Infiniband network status (see "Infiniband Pass-through Module").
Gb pass-through module	Provides information about the network status (see "Gb Ethernet Pass-through Module").

Power Supply Indicator

Each hot-pluggable power supply has indicators that provide information about power status, fault, and the presence of AC power (see Figure 2-6). Table 2-5 lists the power supply indicator codes.

⊘ **NOTICE:** 2100-W power supply modules require 170-264 V to operate; 1200-W power supply modules (systems sold prior to April 2005) require 180–264 V to operate. If they are plugged into 110-V electrical outlets, the power supply modules will not power up.

Figure 2-6. Power Supply Indicators
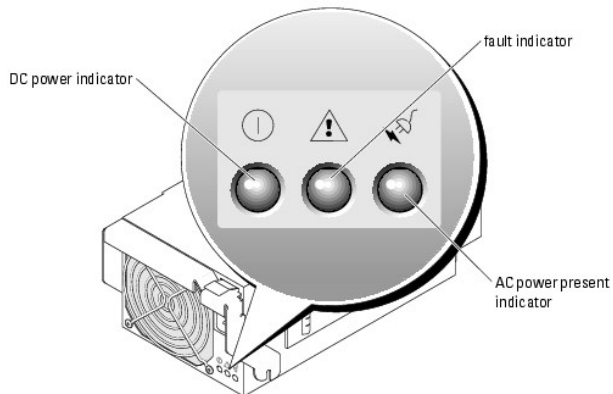
Table 2-5. Power Supply Indicator Codes

Indicator	Icon	Activity Indicator	Indicator Code
DC power indicator		Green	The power supply is operational.
Fault indicator	⚠	Amber	The power supply is in a fault condition. The fault condition can result from either a failed power supply or a failed fan within the power supply. See "Power Supply Modules" in "Installing System Options."
AC power present indicator		Green	AC power is present at the power supply and the system is connected to an AC power source.

Fan Module Indicators

Each hot-pluggable fan module contains two redundant fans (see Figure 2-7). Table 2-6 lists the fan indicator codes.

Figure 2-7. Fan Module Indicators
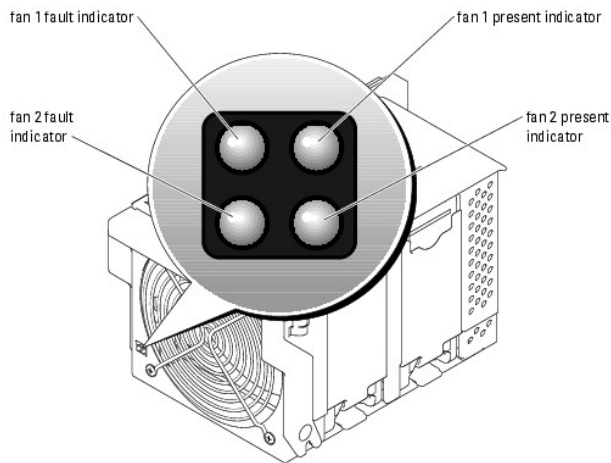
Table 2-6. Fan Module Indicator Codes

Indicator	Activity Indicator	Indicator Code
Fan 1 present indicator	Off	Fan 1 is not installed.
	Green	Fan 1 is installed.
Fan 1 fault indicator	Off	Fan 1 is operating normally.
	Amber	Fan 1 has failed. See "Fan Modules" in "Installing System Options."
Fan 2 present indicator	Off	Fan 2 is not installed.
	Green	Fan 2 is installed.
Fan 2 fault indicator	Off	Fan 2 is operating normally.
	Amber	Fan 2 has failed. See "Fan Modules" in "Installing System Options."

KVM Modules

Your system includes one of the three KVM modules described in this section:

- l Avocent Analog KVM switch module (standard)
- l Avocent Digital Access KVM switch module (optional)
- l KVM switch module (standard on systems sold prior to April 2005)

Avocent Analog KVM Switch Module

The Avocent Analog KVM switch module provides a custom connection for a keyboard, video (monitor), and mouse to monitor a server module. (You must use the custom cable provided with your system to connect the KVM to the external devices.)

> **NOTE:** Your system has two custom cables—one that connects to the front of the server module to connect two USB devices and video, and a second cable that connects to the KVM to provide two PS/2 connections and a video connection. The cables are not interchangeable. It is recommended that you keep these custom cables available.

The switch module also provides an Analog Console Interface (ACI) port, which allows you to connect a server module via Cat5 cabling to an external device such as the Dell 2161DS Digital console switch or Dell 180AS/2160AS analog console switches, without the need for a Server Interface Pod (SIP.)

> **NOTE:** Although the ACI port is an RJ-45 connector and uses Cat5 cabling, it is not an Ethernet network interface port. It is only used for connection to external KVM switches with Analog Rack Interface (ARI) ports.

> **NOTE:** The ACI port can only be used to connect to ARI ports on Dell console switches. To connect to other types or brands of switches, including Avocent switches, you must connect to the switch's PS2 and video ports using the proprietary dongle provided with that switch.

Figure 2-8 shows the external features on the Avocent Analog KVM switch module.

Figure 2-8. Avocent Analog KVM Switch Module

The Avocent Analog KVM switch module also includes an identification indicator (see Figure 2-8). Table 2-7 describes the indicators and features on this switch module.

Table 2-7. Avocent Analog KVM Switch Module Indicators and Features

Feature	Activity Indicator	Indicator Code
Identification indicator	Off	Chassis is not being identified.
	Amber blinking	Chassis is being identified.
Power indicator	Off	KVM switch does not have power.
	Green	KVM switch has power.
Custom connector	None	Allows two PS/2 and one video device to be connected to the system.
ACI port	None	Allows connection of one or more servers to a Dell console switch with an Analog Rack Interface (ARI) port, such as a digital or analog console switch.

Avocent Digital Access KVM Switch Module

The optional Avocent Digital Access KVM switch module allows you to configure and manage the server modules through a single keyboard, monitor and mouse. You select server modules using the On-Screen Configuration and Reporting (OSCAR) graphical user interface.

The Avocent Digital Access KVM switch module includes the following features:

l   Analog KVM switching

    This switch can be used as an Analog switch, allowing local KVM switching through direct connect of a keyboard, monitor and mouse; or as tiered into external analog KVM switches. This switch uses the same OSCAR interface as the Avocent Analog KVM switch to switch between server modules.

    The Digital Access KVM switch provides a custom connector which brings out PS2/video ports. These ports can be directly connected to a keyboard, monitor, and mouse, or tiered into an external analog KVM switch with KVM ports. If you are connecting the Digital Access KVM switch to an external KVM switch using Cat5 connectors/ACI ports, that switch's dongle (PS2/video to Cat5) is required.

    > **NOTE:** The Avocent Digital Access KVM module differs from the Avocent Analog KVM module in that the Digital Access KVM switch module does not have an ACI port; it has an Ethernet network interface.

l   Remote control of Virtual Media and virtual KVM

    After connecting to your network using the switch's Ethernet connection, use the system's DRAC/MC GUI to select Media and/or console and which server module to connect to.

NOTE: You must connect the switch's Ethernet port into the same network as the DRAC/MC port.

You can then use the switch's Virtual Media and virtual KVM features:

- Virtual Media – Using this feature, you can remotely map local drives on a management workstation to the server module, or boot a server module to a remote diskette, optical drive, or USB key. For example, you can remotely perform operating system installation, operating system recovery, BIOS updates, and other functions.

- Virtual KVM – You can remotely boot to a server module using an operating system-independent graphical console.

Figure 2-9 shows the external features of the Avocent Digital Access KVM switch module.

Figure 2-9. Avocent Digital Access KVM Switch Module
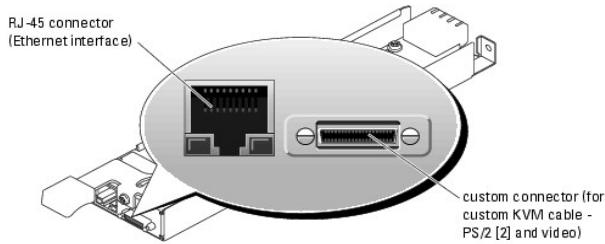
KVM Switch Module

The basic KVM switch module offered on systems sold prior to April 2005 provides basic switch functionality to monitor a server module. You must use the custom cable provided with your system to connect the KVM module to the external devices. The custom cable provides two PS/2 connectors and one video connector.

NOTE: Your system has two custom cables—one that connects to the front of the server module to connect two USB devices and video, and a second cable that connects to the KVM to provide two PS/2 connections and a video connection. The cables are not interchangeable. It is recommended that you keep these custom cables available.
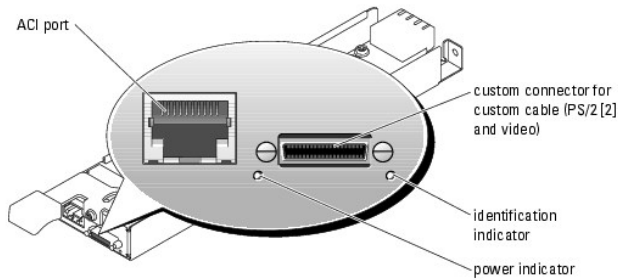
The KVM switch module also includes a back-panel system identification button and identification indicator (see Figure 2-10). Table 2-8 lists the indicators and features on the KVM switch module.

Figure 2-10. KVM Switch Module Features
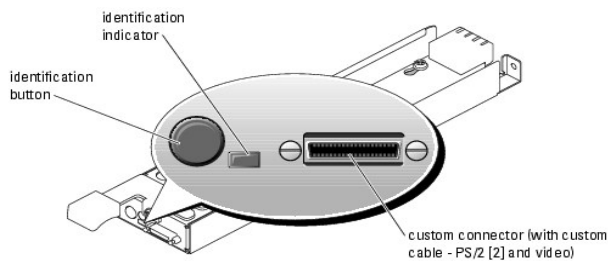
Table 2-8. KVM Switch Module Indicators and Features

Indicator	Icon	Activity Indicator	Indicator Code
Identification button	ID	None	Press to activate the front and back identification indicators. To turn off the identification feature, press the button again.
Identification indicator		Off	System has not been selected for identification.
		Amber	System is selected for identification.
		Amber blinking	System is being identified.
NOTE: After a back-panel KVM switch module is replaced or hot-swapped, its system identification indicator may start flashing. If this occurs, press the identification button on the front of the system to reset the identification indicator.			
Custom connector	⊣▣ ▥	None	Allows two PS/2 and one video device to be connected to the system.

		⬛		

DRAC/MC Module

The DRAC/MC provides serial and Ethernet management ports, a status indicator when redundant DRAC/MCs are installed (when available), and status indicators for the DRAC/MC and for the link to the system's onboard network interface controller (see Figure 2-11). See the documentation for the DRAC/MC module for specific information on serial port redirection of server modules and switches. Table 2-9 provides information about the status indicators.

Figure 2-11. DRAC/MC Module Features
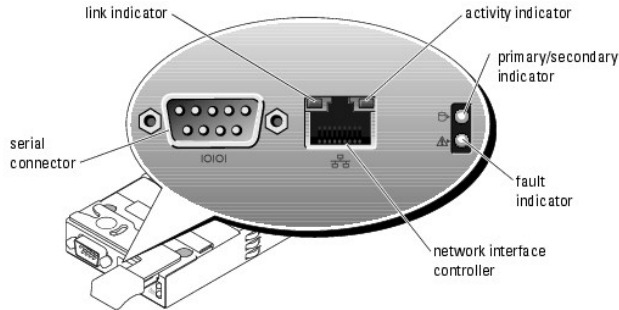
Table 2-9. DRAC/MC Module Indicators

Indicator Type	Icon	Activity Indicator	Indicator Code
Network interface controller link indicator	🖧	Off	LAN is not linked.
		Green	LAN is linked.
Network interface controller activity indicator		Off	LAN is not active.
		Amber blinking	Indicates that the system DRAC/MC and the LAN are communicating.
Primary/secondary indicator	⬛▸	Off	The DRAC/MC is a backup for the master DRAC/MC. **NOTE:** For information on availability of dual (redundant) configurations for the DRAC/MC, see **www.dell.com**.
		Green	The DRAC/MC is active for system management.
		Green blinking	The DRAC/MC is in special or manufacturing mode.
Fault indicator	⚠▸	Off	The DRAC/MC is operating normally.
		Amber	In a single (nonredundant) configuration, this DRAC/MC failed. See "DRAC/MC Module" in "Installing System Options."
		Amber blinking	In a dual (redundant) configuration (when available), this DRAC/MC failed. See "DRAC/MC Module" in "Installing System Options."
Serial connector	IOIOI	None	Used for a serial connection with a null modem cable.

DRAC/MC Version 1.1 (or Later) Module

If you have a DRAC/MC version 1.1 (or later) module installed, ensure that you read that product's **readme.txt** file. It contains updated information, including system indicator behavior in certain conditions.

Important I/O Configuration Considerations

⚠ **CAUTION: Data loss can result if you perform certain actions on a system in which the I/O bays have not been configured correctly. Specifically, bay 2 should have an I/O module installed only if an identical module is present in bay 1, and bay 4 should have an I/O module installed only if an identical module is present in bay 3. Except in these cases (or in a case where you temporarily need to swap a failed I/O module in bay 1 or 3), bays 2 and 4 should be unoccupied.**

Unless your system is configured according to these guidelines, do not perform any of the following actions:

- l   Upgrade DRAC/MC firmware

- l   Issue a software reset command for a DRAC/MC, such as racadm racreset

- l   Reseat a DRAC/MC module

- l   Cause a DRAC/MC failover event, such as removing the network cable from the primary DRAC/MC

Performing any of these actions will power off and stop traffic on the bay 2 or bay 4 I/O module, resulting in data loss.

When initiated, the DRAC/MC version 1.1 (or later) firmware algorithm must find a module in bay 1 before bay 2 and a module in bay 3 before bay 4. Otherwise, the module in bay 2 or bay 4 will be powered off if you perform a firmware upgrade procedure on the DRAC/MC, cause a DRAC/MC failover, or reset the DRAC/MC.

See the current *Dell Remote Access Controller/Modular Chassis User's Guide* at **support.dell.com** for more information about configuring your DRAC/MC system.

Redundancy Support

If you are adding a DRAC/MC version 1.1 (or later) module to a system to enable redundancy, the firmware levels of both DRAC/MC modules must be version 1.1. If the DRAC/MC module currently in the system is version 1.0, you must upgrade the firmware of the current module to version 1.1 *prior* to installing the new DRAC/MC version 1.1 (or later) module.

NOTE: A DRAC/MC module's firmware version is displayed on its web-based GUI or by typing the command getsysinfo or racadm getsysinfo.

NOTE: DRAC/MC version 1.1 (or later) firmware uses a different MAC address than the MAC address reported by DRAC/MC version 1.0 firmware. Therefore, a DHCP-assigned dynamic IP address may change after updating to the DRAC/MC version 1.1 firmware.

See the latest *Dell Remote Access Controller/Modular Chassis User's Guide* at **support.dell.com** for more information about firmware updates and installing redundant DRAC/MC modules. This guide also provides complete instructions on how to set up and operate that version of the module.

I/O Connectivity

The system offers several options for connectivity through a combination of embedded Ethernet controllers, optional I/O daughter cards on the server module, and chassis I/O modules in the rear of the chassis. An I/O module's green system/diagnostic indicator is off when the module is properly operating or is off and blinks when the module is not properly operating.

Guidelines for Installing Connectivity Modules

The following guidelines must be used when populating I/O modules. See Figure 2-5 for I/O bay locations.

- l   Insert a connectivity module into I/O bay 1 before installing a connectivity module into I/O bay 2.

  I/O bays 1 and 2 support only Gb Ethernet switch or pass-through modules.

- l   Insert a connectivity module into I/O bay 3 before installing a connectivity module into I/O bay 4.

  Ensure that the connectivity modules installed in I/O bays 3 and 4 are of the same fabric type.

- l   I/O bay 3 connects to port 1 on the daughter card (optional) installed in the server module. This bay must be populated if there is a daughter card installed in the server module. The type of I/O module installed in this bay must match the type of daughter card installed in the server module. For example, a Fibre Channel I/O module requires that a Fibre Channel daughter card be installed in the server module.

Table 2-10 lists the valid I/O module configurations. See Figure 2-5 for I/O bay locations.

Table 2-10. Valid I/O Module Configurations

Network Controller	Bay IO/1	Bay IO/2	Bay IO/3	Bay IO/4
Server Module Embedded NIC 1	Ethernet switch module or pass-through module	N/A	N/A	N/A
Server Module Embedded NIC 2	N/A	Ethernet switch module or pass-through module	N/A	N/A
Fibre Channel Daughter Card Port 1	N/A	N/A	Fibre channel switch or pass-through module	N/A
Fibre Channel Daughter Card Port 2	N/A	N/A	N/A	Fibre channel switch or pass-through module
Gb Ethernet Daughter Card Port 1	N/A	N/A	Ethernet switch module or pass-through module	
Gb Ethernet Daughter Card Port 2	N/A	N/A		Ethernet switch module or pass-through module
Infiniband Daughter Card	N/A	N/A	Infiniband module (either or both bays)	Infiniband module (either or both bays)

PowerConnect 5316M Ethernet Switch Module

The PowerConnect 5316M Ethernet switch module is a 16-port switch with 6 uplinks and 10 downlinks (see Figure 2-12). The uplinks connect to the external Ethernet network and operate at 10/100/1000 Mb. The downlinks connect to the embedded Ethernet controller on the server module and operate at 1000 Mb only.

The PowerConnect 5316M Ethernet switch module is hot-pluggable. To provide connectivity into separate Ethernet networks, two switch modules can be installed in bays I/O 1 and I/O 2 (see Figure 2-5). I/O bays 3 and 4 require that you install a Gb Ethernet daughter card in the server module. If redundancy is not required, the switch module must be installed in I/O 1 bay. The switch module has an internal serial port that communicates with the DRAC/MC module. Table 2-11 lists the indicators on each switch module. For additional information about the PowerConnect 5316M Ethernet switch module, see the documentation that shipped with the module.

Figure 2-12. PowerConnect 5316M Ethernet Switch Module Indicators and Features
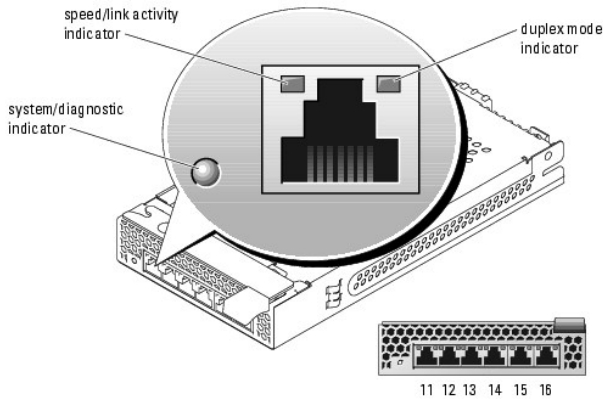
Table 2-**11. PowerConnect 5316M Ethernet Switch Module Indicators**

Indicator Type	Activity Indicator	Indicator Code
Speed/link activity indicator (bicolor)	Off	Not connected.
	Green	The port is connected to a valid link partner on the network.
	Green blinking	Network data is being sent or received at 1 Gb.
	Amber	The port is connected to a valid link partner on the network.
	Amber blinking	Network data is being sent or received at 10 Mb or 100 Mb.
Duplex mode indicator	Green	The port is operating at full duplex mode.
	Off	The port is operating at half duplex mode.
System/diagnostic indicator	Green blinking	Module is being powered down by the DRAC/MC controller due to an I/O module mismatch. See "Guidelines for Installing Connectivity Modules."
	Off	Module is operating normally.

Fibre Channel Pass-Through Module

The Fibre Channel pass-through module provides a bypass connection between the Fibre Channel daughter card in the server module and optical transceivers for direct connection into a Fibre Channel switch or a storage array. (see Figure 2-13). The Fibre Channel pass-through modules are hot-pluggable. The Fibre Channel pass-through module in I/O bay 3 connects to port 1 on the optional Fibre Channel daughter card installed in a server module. The Fibre Channel pass-through module in I/O bay 4 connects to port 2 on the optional Fibre Channel daughter card installed in a server module. To provide redundancy, both I/O bay 3 and I/O bay 4 must have Fibre Channel pass-through modules installed. Table 2-12 lists the functionality of the Fibre Channel pass-through module indicators. For additional information on installing this module, see "Chassis I/O Module" in "Installing System Options."

NOTE: The Fibre Channel pass-through module includes Short Wave Small Form Factor Pluggable (SFP) optical transceivers. To ensure proper functionality, use only the SFPs provided with this module.

Figure 2-13. Fibre Channel Pass-through Module Indicators and Features
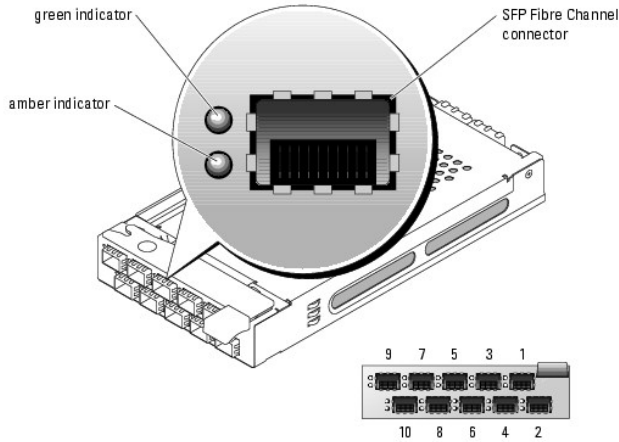
Table 2-12. Fibre Channel Pass-Through Module Indicators

Indicator Type	Activity Indicator	Indicator Code
Fibre Channel indicator (green/amber)	Off	Power is off to the system.
	Green/amber	System has power.
	Green/off	Fibre Channel connection is online.
	Off/amber	The port is connected to a valid link partner on the network.
	Off/flashing (twice per second)	Connection has lost synchronization.

Fibre Channel Switch Module

You can install one or two hot-pluggable Fibre Channel switch modules in I/O bay 3 and I/O bay 4, beginning with I/O bay 3. You must also install a Fibre Channel HBA daughter card in the server module. The Fibre Channel switch module includes four external autosensing Fibre Channel ports (1 Gb/sec or 2 Gb/sec) numbered 10 through 13, 10 internal ports, and one 10/100 Mb Ethernet port with an RJ-45 connector.

See the documentation for your particular Fibre Channel switch module for the functionality and location of the switch module indicators. For general information on installing this module, see "Chassis I/O Module" in "Installing System Options."

NOTE: The Fibre Channel switch module includes Short Wave Small Form Factor Pluggable (SFP) optical transceivers. To ensure proper functionality, use only SFPs provided with this module.

Infiniband Pass-through Module

The Infiniband pass-through module provides a bypass connection between an optional Infiniband Host Channel Adapter (HCA) daughter card in the server module and 4x Infiniband Transceivers for direct connection to an Infiniband switch. The Infiniband pass-through modules are hot-pluggable. To provide redundancy, both I/O bay 3 and I/O bay 4 must have Infiniband pass-through modules installed. In this configuration, the module in I/O bay 3 connects to port 1 on the Infiniband HCA daughter card; the Infiniband pass-through module in I/O bay 4 connects to port 2 on the Infiniband HCA daughter card.

NOTE: The Infiniband pass-through module uses small form factor 4x Infiniband connectors. To ensure proper functionality, use only cables provided with the module.

NOTE: If you require service, technical support, or parts replacement for your Topspin Infiniband product, contact Topspin Support Services directly at 1-800-499-1473 or through **www.topspin.com**.

Gb Ethernet Pass-through Module

The Gb Ethernet pass-through module has 10 RJ45 ports. When installed in I/O 1 bay or I/O 2 bay, the Gb Ethernet pass-through module provides a connection between the server module and an external Gb Ethernet device. When installed in the I/O 3 bay or I/O 4 bay, the Gb Ethernet pass-through module provides a connection between the optional internal Gb Ethernet daughter card in the server module, providing a direct connection into an external Gb Ethernet device (see Figure 2-14). The Gb Ethernet pass-through modules are hot-pluggable. The Gb Ethernet pass-through module in I/O bay 3 connects to the optional Gb Ethernet daughter card installed in a server module. The Gb Ethernet pass-through module in I/O bay 4 connects to port 2 on the optional Gb Ethernet daughter card installed in a server module. Table 2-13 lists the functionality of the Gb Ethernet pass-through module indicators. For additional information on installing this module, see "Chassis I/O Module" in "Installing System Options."

NOTE: Only connect the Gb Ethernet module to 1000-Mb external switch ports. Do not use this module with 10-Mb or 100-Mb external switch ports.

Figure 2-14. Gb Pass-through Module Indicators and Features

activity indicator | link indicator | status indicator | activity indicator | link indicator

9 7 5 3 1
10 8 6 4 2
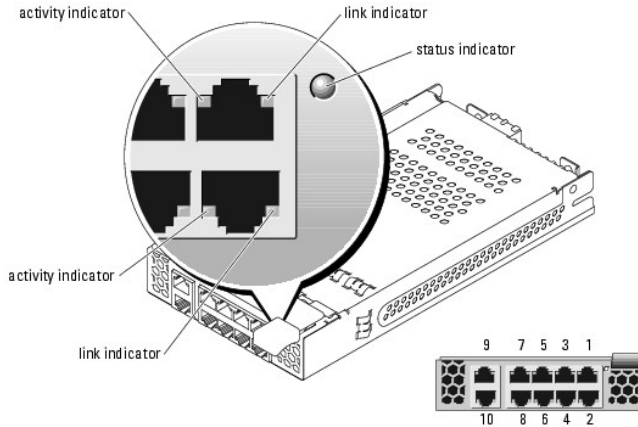
📝 **NOTE:** Connectors on the Gb pass-through module correspond directly to the server module number. For example, server module 5 is connected to port 5 on the Gb pass-through module.

Table 2-13. Gb Pass-through Module Indicators

Indicator Type	Activity Indicator	Indicator Code
Link indicator/activity indicator	Green/amber blinking	The Gb Ethernet connector is linked to the server module and there is network activity
	Green/off	The Gb Ethernet connector is linked to the server module and there is no network activity.
	Off/amber blinking	The Gb Ethernet connector is not linked to the server module and there is network activity.
	Off/off	The Gb Ethernet connector is not linked to the server module and there is no network activity.
Status indicator	Green	Module is operating correctly.
	Green blinking	Module is being powered down by the DRAC/MC controller due to an I/O module mismatch. See " Guidelines for Installing Connectivity Modules."

Server Module Messages

System messages appear on the screen to notify you of a possible problem with the system. Table 2-14 lists the system messages that can occur and the probable cause and corrective action for each message.

⚠️ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

📝 **NOTE:** If you receive a system message that is not listed in Table 2-14, check the documentation for the application that is running when the message appears or the operating system's documentation for an explanation of the message and recommended action.

Table 2-14. Server Module Messages

Message	Causes	Corrective Actions
Amount of available memory limited to 256MB!	**OS Install Mode** is enabled in the System Setup program.	Disable **OS Install Mode** in the System Setup program. See "Using the System Setup Program" in your *User's Guide.*
Attempting to update Remote Configuration. Please wait....	Remote Configuration is in progress.	Wait until the process is complete.
BIOS Update Attempt Failed	BIOS remote update failed.	Retry update.
Caution! NVRAM_CLR jumper is installed on system board.	NVRAM_CLR switch is set to "on."	Set the NVRAM_CLR switch to "off." See Figure A-2 for the jumper location.
CD-ROM drive not found	Improperly connected or missing CD drive.	If no custom cable is installed, disable the IDE controller. See "Using the System Setup Program" in the *User's Guide.* If an optical drive is installed, see "Troubleshooting USB Devices" in "Troubleshooting Your System."
CPUs with different cache sizes detected.	Mismatched processors are installed.	Install a correct version of the microprocessor so that both microprocessors have the same cache size. See "Microprocessors" in "Installing System Options."

`Decreasing available memory`	Faulty or improperly installed memory modules.	Ensure that all memory modules are properly installed. See "Troubleshooting Server Module Memory" in "Troubleshooting Your System."
`Diskette drive 0 seek failure`	Incorrect configuration settings in System Setup program.	Run the System Setup program to correct the settings. See "Using the System Setup Program" in your *User's Guide*.
	Faulty or improperly installed diskette or optical drive to the custom cable.	Replace the diskette. Ensure that the diskette drive and optical drive cables are properly connected. See "Troubleshooting USB Devices" in "Troubleshooting Your System."
`Diskette read failure`	Faulty or improperly inserted diskette.	Replace the diskette.
`Diskette subsystem reset failed`	Faulty diskette drive or optical drive controller.	Ensure that the diskette drive and optical drive cables are properly connected to the custom cable. See "Troubleshooting USB Devices" in "Troubleshooting Your System." If the problem persists, see "Getting Help."
`Drive not ready`	Diskette missing or improperly inserted in diskette drive.	Reinsert or replace the diskette.
`Error: Incorrect memory configuration. Ensure memory in slots DIMM1_A and DIMM1_B, DIMM2_A and DIMM2_B, DIMM3_A and DIMM3_B match identically in size, speed, and rank.`	One or more unmatched pairs of memory modules are detected.	Ensure that the memory modules are installed in matched pairs. See "General Memory Module Installation Guidelines" in "Installing System Options."
`Error: Incorrect memory configuration. Memory slots DIMM3_A and DIMM3_B only support single rank DIMMs. Remove the dual rank DIMMs from slots DIMM3_A and DIMM3_B.`	Dual-rank memory modules are installed in slots DIMM3_A and DIMM3_B.	Ensure that only single-rank memory modules are installed in slots DIMM3_A and DIMM3_B. See "General Memory Module Installation Guidelines" in "Installing System Options."
`Error: Incorrect memory configuration. Move DIMM3_A and DIMM3_B into DIMM2_A and DIMM2_B.`	Memory modules are not installed in consecutive banks.	Move memory modules from slots DIMM3_A and DIMM3_B into DIMM2_A and DIMM2_B. See "General Memory Module Installation Guidelines" in "Installing System Options."
`Error: Incorrect memory configuration. Swap the DIMMs in slots DIMM1_A and DIMM1_B with DIMMs in slots DIMM2_A and DIMM2_B.`	If dual-rank memory modules are installed in the system, they must be installed in slots DIMM1_A and DIMM1_B.	Swap memory modules in slots DIMM2_A and DIMM2_B with modules in DIMM1_A and DIMM1_B. See "General Memory Module Installation Guidelines" in "Installing System Options."
`Error: Incorrect memory configuration. Memory slots DIMM3_A and DIMM3_B must be empty if dual rank memory DIMMS are in slots DIMM2_A and DIMM2_B.`	Memory modules are **installed in bank 3. Dual**-rank memory modules are installed in banks 1 and 2.	Remove memory modules from slots DIMM3_A and DIMM3_B. See "General Memory Module Installation Guidelines" in "Installing System Options."
`Error 8602: Auxiliary device failure. Verify that the keyboard and mouse are securely attached to correct connectors.`	Loose or improperly connected mouse or keyboard cable to the custom cable; faulty mouse or keyboard.	Replace the mouse. If the problem persists, replace the keyboard.
`Gate A20 failure`	Faulty keyboard controller (faulty server module board).	See "Getting Help."
`General failure`	Operating system corrupted or improperly installed.	Reinstall the operating system.
`Keyboard controller failure`	Faulty keyboard controller (faulty server module board).	See "Getting Help"

`Keyboard data line failure`
 	
`Keyboard failure`
 	
`Keyboard stuck key failure`
	Loose or improperly connected keyboard cable; faulty keyboard to the custom cable; faulty keyboard controller.	Ensure that the keyboard is properly connected. If the problem persists, replace the keyboard. If the problem persists, see "Getting Help."

`Keyboard fuse has failed.`	Keyboard fuse has failed.	Replace the keyboard.
`Manufacturing mode detected`	System is incorrectly configured.	After the message appears during system module boot, press <Alt><F> to turn off manufacturing mode.

`Memory address line failure at address, read value expecting value`
 	
`Memory double word logic failure at address, read value expecting value`
 	
`Memory odd/even logic failure at start address to end address`
 	
`Memory write/read failure at address, read value expecting value`
	Faulty or improperly installed memory modules, or faulty server module board.	Ensure that all memory modules are properly installed. See "Troubleshooting Server Module Memory" in "Troubleshooting Your System." If the problem persists, see "Getting Help."

`Memory tests terminated by keystroke`	The spacebar was pressed during POST to terminate the memory test.	Information only.
`No boot device available`	Faulty or missing diskette drive, optical drive, or hard drive.	Check the **Integrated Devices** configuration settings in the System Setup program. See "Using the System Setup Program" in your *User's Guide*. Ensure that either **SCSI Controller**, **Diskette Controller**, or **IDE CD-ROM Controller** is enabled. If the server module is booting from a SCSI controller, ensure that the controller is properly connected. If the problem persists, replace the drive. See "Hard Drives."
`No boot sector on hard-disk drive`	An operating system is not on the hard drive.	Check the hard-drive configuration settings in the System Setup program. See "Using the System Setup Program" in your *User's Guide*.

No timer tick interrupt	Faulty server module board.	See "Getting Help."
Not a boot diskette	Not a bootable diskette.	Use a bootable diskette.
PCI BIOS failed to install	Faulty or improperly installed PCIe daughter card.	Reseat the daughter card. See "Daughter Card" in "Installing System Options." If the problem persists, see "Getting Help."
PCIe Degraded Link Width Error: Embedded Bus#*nn*/Dev#*nn*/Func*n* Expected Link Width is *n* Actual Link Width is *n*	Faulty or improperly installed PCIe daughter card.	Reseat the daughter card. See "Daughter Card" in "Installing System Options." If the problem persists, see "Getting Help."
PCIe Degraded Link Width Error: Slot *n* Expected Link Width is *n* Actual Link Width is *n*	Faulty or improperly installed PCIe daughter card.	Reseat the daughter card. See "Daughter Card" in "Installing System Options."If the problem persists, see "Getting Help."
PCIe Training Error: Embedded Bus#*nn*/Dev#*nn*/Func*n*	Faulty or improperly installed PCIe daughter card.	Reseat the daughter card. See "Daughter Card" in "Installing System Options." If the problem persists, see "Getting Help."
PCIe Training Error: Slot *n*	Faulty or improperly installed PCIe daughter card.	Reseat the daughter card. See "Daughter Card" in "Installing System Options." If the problem persists, see "Getting Help."
Plug & Play Configuration Error	Error encountered in initializing PCI device; faulty server module board.	Set the NVRAM_CLR switch to "on" and reboot the server module. See Figure A-2 for switch location. Check for a BIOS update. If the problem persists, see "Getting Help."
Read fault Requested sector not found	Faulty diskette, diskette drive, optical drive, or hard drive.	Replace the diskette. Ensure that the custom cable is properly connected. See "Troubleshooting USB Devices" or "Troubleshooting Hard Drives" in "Troubleshooting Your System" for the appropriate drive(s) installed in your system.
Remote Configuration update attempt failed	Server module could not implement Remote Configuration request.	Retry Remote Configuration.
Sector not found Seek error Seek operation failed	Faulty diskette or hard drive.	Replace the diskette. If the problem persists, see "Troubleshooting Hard Drives" in "Troubleshooting Your System" for the appropriate drive installed in your system.
Shutdown failure	Shutdown test failure.	Ensure that all memory modules are properly installed. See "Troubleshooting Server Module Memory" in "Troubleshooting Your System." If the problem persists, see "Getting Help."
Spare bank enabled	Memory spare bank enabled.	Not applicable.
The amount of system memory has changed.	Faulty memory module.	See "Troubleshooting Server Module Memory" in "Troubleshooting Your System." If the problem persists, see "Getting Help."
	Information only, if you have changed the memory configuration.	
Time-of-day clock stopped	Faulty battery; faulty server module board.	See "Troubleshooting the Server Module Battery" in "Troubleshooting Your System." If the problem persists, see "Getting Help."
Time-of-day not set – please run SETUP program	Incorrect **Time** or **Date** settings; faulty server module board battery.	Check the **Time** and **Date** settings See "Using the System Setup Program" in your *User's Guide*. If the problem persists, see "Troubleshooting the Server Module Battery" in "Troubleshooting Your System."
Timer chip counter 2 failed	Faulty server module board.	See "Getting Help."
Unexpected interrupt in protected mode	Faulty or improperly installed memory modules or faulty server module board.	Ensure that all memory modules are properly installed. See "General Memory Module Installation Guidelines" in "Installing System Options." If the problem persists, see "Troubleshooting Server Module Memory" in "Troubleshooting Your System." If the problem persists, see "Getting Help."
Unsupported CPU combination	Mismatched processors are installed.	Replace a microprocessor so that both microprocessors match. See "Microprocessors" in "Installing System Options."
	Processor is not supported by the server module.	Check for a BIOS update using the Dell Support website at **support.dell.com**. If the problem persists, install a supported processor. See "Microprocessors" in "Installing System Options."
Unsupported CPU stepping detected	Processor is not supported by the server module.	Check for a BIOS update using the Dell Support website at **support.dell.com**. If the problem persists, install a supported processor. See "Microprocessors" in "Installing System Options."
Warning: Detected mode change from RAID to SCSI *x* of the embedded RAID subsystem.	Type of controller has changed from optional RAID to SCSI since previous system boot.	Back up information on the hard drives before changing the type of controller used with the drives.
Warning: Detected mode change from SCSI to RAID *x* of the embedded RAID subsystem.	Type of controller has changed from SCSI to optional RAID since previous system boot.	Back up information on the hard drives before changing the type of controller used with the drives.
Warning! No microcode update loaded for processor *n*	Unsupported processor.	Update the BIOS firmware using the Dell Support website at **support.dell.com**.
Write fault Write fault on selected drive	Faulty diskette, diskette drive, optical drive, hard drive.	Replace the diskette. Ensure that the custom cable is properly connected. See "Troubleshooting USB Devices" or "Troubleshooting Hard Drives" in "Troubleshooting Your System" for the appropriate drive(s) installed in your system.

Server Module Beep Codes

If an error that cannot be reported on the screen occurs during POST, the system may emit a series of beeps that identifies the problem.

NOTE: If the system boots without a keyboard, mouse, or monitor attached, the system does not issue beep codes related to those peripherals.

If a beep code is emitted, write down the series of beeps and then look it up in Table 2-15. If you are unable to resolve the problem by looking up the meaning of the beep code, use system diagnostics to identify the possible cause. If you are still unable to resolve the problem, see "Getting Help."

CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.

Table 2-15. Server Module Beep Codes

Code	Cause	Corrective Action
1-1-2	CPU register test failure	See "Troubleshooting Microprocessors" in "Troubleshooting Your System."
1-1-3	CMOS write/read failure; faulty server module board	See "Getting Help."
1-1-4	BIOS error	Reflash the BIOS.
1-2-1	Programmable interval-timer failure; faulty server module board	See "Getting Help."
1-2-2	DMA initialization failure	See "Troubleshooting Server Module Memory" in "Troubleshooting Your System."
1-2-3	DMA page register write/read failure	
1-3-1	Main-memory refresh verification failure	
1-3-2	No memory installed	
1-3-3	Chip or data line failure in the first 64 KB of main memory	
1-3-4	Odd/even logic failure in the first 64 KB of main memory	
1-4-1	Address line failure in the first 64 KB of main memory	
1-4-2	Parity failure in the first 64 KB of main memory	
1-4-3	Fail-safe timer test failure	
1-4-4	Software NMI port test failure	
2-1-1 through 2-4-4	Bit failure in the first 64 KB of main memory	
3-1-1	Slave DMA-register failure	Faulty server module board. See "Getting Help."
3-1-2	Master DMA-register failure	
3-1-3	Master interrupt-mask register failure	
3-1-4	Slave interrupt-mask register failure	
3-2-2	Interrupt vector loading failure	
3-2-4	Keyboard-controller test failure	
3-3-1	CMOS failure	
3-3-2	System configuration check failure	
3-3-3	Keyboard controller not detected	
3-3-4	Video memory test failure	
3-4-1	Screen initialization failure	
3-4-2	Screen-retrace test failure	
3-4-3	Video ROM search failure	
4-2-1	No timer tick	Faulty server module board. See "Getting Help."
4-2-2	Shutdown test failure	
4-2-3	Gate A20 failure	
4-2-4	Unexpected interrupt in protected mode	See "Troubleshooting the DRAC/MC Module" in "Troubleshooting Your System."
4-3-1	Improperly installed or faulty memory modules	See "Troubleshooting Server Module Memory" in "Troubleshooting Your System."
4-3-2	No memory modules installed in the first memory module connector	Install a memory module in the first memory module connector. See "Memory" in "Installing System Options."
4-3-3	Faulty server module board	See "Getting Help."
4-3-4	Time-of-day clock stopped	See "Troubleshooting Server Module Memory" in "Troubleshooting Your System." If the problem persists, see "Getting Help."
4-4-1	Super I/O chip failure; faulty server module board	See "Getting Help."
4-4-4	Cache test failure; faulty processor	See "Troubleshooting Microprocessors" in "Troubleshooting Your System."

Warning Messages

A warning message alerts you to a possible problem and prompts you to respond before the system continues a task. For example, before you format a diskette, a message will warn you that you may lose all data on the diskette. Warning messages usually interrupt the task and require you to respond by typing y (yes) or n (no).

NOTE: Warning messages are generated by either the application or the operating system. For more information, see "Finding Software Solutions" and the documentation that accompanied the operating system or application.

Diagnostics Messages

When you run system diagnostics, an error message may result. Diagnostic error messages are not covered in this section. Record the message on a copy of the Diagnostics Checklist in "Getting Help," then follow the instructions in that section for obtaining technical assistance.

Alert Messages

Systems management software generates alert messages for your system. Alert messages include information, status, warning, and failure messages for drive, temperature, fan, and power conditions. For more information, see the systems management software documentation.

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Finding Software Solutions

Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

- ● Before You Begin
- ● Troubleshooting Errors and Conflicts

Software problems can be caused by:

- l   Improper installation or configuration of an application
- l   Application conflicts
- l   Input errors
- l   Interrupt assignment conflicts

Ensure that you are installing the software application according to the software manufacturer's recommended procedures. If a problem occurs after you install the software, you might need to troubleshoot your software application and your system.

See the documentation that accompanied the software or contact the software manufacturer for detailed troubleshooting information.

NOTE: If all of the system diagnostic tests complete successfully, then the problem is most likely caused by the software and not the hardware.

Before You Begin

- l   Scan the software media with antivirus software.
- l   Ensure that the software CD surfaces are clean and are not damaged.
- l   Read the software documentation before you run the installation utility.
- l   Be prepared to respond to prompts from the installation utility.

  The installation utility may require you to enter information about your system, such as how the operating system is configured and the type of peripherals that are connected to the system. Have this information available before running the installation utility.

Troubleshooting Errors and Conflicts

While configuring and running software, problems might occur that are caused by input errors, application conflicts, and/or IRQ assignment conflicts. The problems are sometimes indicated by error messages.

Error messages are generated by system hardware or software. "Indicators, Codes, and Messages" provides information about error messages that are hardware-based. If you receive an error message that is not listed, see your operating system or software program documentation for troubleshooting information.

Input Errors

Pressing a specific key or set of keys at the wrong time may produce unexpected results. See the documentation that came with the software application to ensure that the values or characters you are entering are valid.

Ensure that your operating system is configured properly to run the application. Remember that whenever you change the parameters of the operating system, the changes can conflict with an application's operating requirements. After you configure the operating system, you may need to reinstall or reconfigure a software application so that it can run properly in its new environment.

Application Conflicts

Some applications can leave unnecessary files or data behind after they are deleted from your system. Device drivers can also create application errors. If application errors occur, see your application device driver or operating system documentation for troubleshooting information.

IRQ Assignment Conflicts

Most PCI devices can share an IRQ with another device, but they cannot use an IRQ simultaneously. To avoid this type of conflict, see the documentation for each PCI device for specific IRQ requirements. Table 3-1 lists the IRQ assignment defaults.

Table 3-1. IRQ Assignment Defaults

IRQ Line	Assignment
IRQ0	System timer
IRQ1	Keyboard controller
IRQ2	Interrupt controller 1 to enable IRQ8 through IRQ15
IRQ3	*Available*
IRQ4	Reserved for Console Redirection
IRQ5	Remote access controller
IRQ6	*Available*
IRQ7	*Available*
IRQ8	Real-time clock
IRQ9	ACPI functions (used for power management)
IRQ10	*Available*
IRQ11	*Available*
IRQ12	PS/2 mouse port unless the mouse is disabled through the System Setup program
IRQ13	Math coprocessor
IRQ14	*Available*
IRQ15	*Available*

Running System Diagnostics

Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

- Using Server Administrator Diagnostics
- System Diagnostics Features
- When to Use the System Diagnostics
- Running the System Diagnostics
- System Diagnostics Testing Options
- Using the Advanced Testing Options
- Error Messages

If you experience a problem with your server module, run the diagnostics before calling for technical assistance. The purpose of the diagnostics is to test your server module's hardware without requiring additional equipment or risking data loss. If you are unable to fix the problem yourself, service and support personnel can use diagnostics test results to help you solve the problem.

Using Server Administrator Diagnostics

To assess a server module problem, first use the online Server Administrator diagnostics. If you are unable to identify the problem, then use the system diagnostics.

To access the online diagnostics, log into the Server Administrator home page, and then click the **Diagnostics** tab. For information about using diagnostics, see the online help. For additional information, see the *Server Administrator User's Guide*.

System Diagnostics Features

The system diagnostics provides a series of menus and options for particular device groups or devices on a server module. The system diagnostics menus and options allow you to:

- Run tests individually or collectively

- Control the sequence of tests

- Repeat tests

- Display, print, or save test results

- Temporarily suspend testing if an error is detected or terminate testing when a user-defined error limit is reached

- View help messages that briefly describe each test and its parameters

- View status messages that inform you if tests are completed successfully

- View error messages that inform you of problems encountered during testing

When to Use the System Diagnostics

If a major component or device in the server module does not operate properly, component failure may be indicated. As long as the microprocessor and the server module's input/output devices (monitor, keyboard, and diskette drive) are functioning, you can use the system diagnostics to help identify the problem.

Running the System Diagnostics

The system diagnostics can be run from either the utility partition on your hard drive or a USB flash drive.

> **NOTICE:** Use the system diagnostics to test only your server module. Using this program with other server modules may cause invalid results or error messages. In addition, use only the program that came with your server module (or an updated version of that program).

From the Utility Partition

1. As the server module boots, press <F10> during POST.

2. From the utility partition main menu under **Run System Utilities**, select **Run System Diagnostics**.

From a USB Flash Drive

✎ **NOTE:** USB devices can be connected to a server module only through the front-panel custom cable.

1. Format the USB flash drive to emulate a hard drive.

   See the documentation that came with your USB flash drive for instructions.

2. Configure the USB flash drive to be a bootable device.

   See the documentation that came with your USB flash drive for instructions. Dell also provides a USB memory key boot utility for download at **support.dell.com**.

3. Install Microsoft® DOS® on the USB flash drive.

4. Create a directory for the system diagnostics on the USB flash drive.

5. Copy the system diagnostics files into the directory.

6. Ensure that you have the USB flash drive connected to the server module.

7. Enter the System Setup program and ensure that the **USB Flash Drive Emulation Type** option is set to **Auto** and set the USB flash drive as the first device in the **Hard-Disk Drive Sequence** option.

   See "Using the System Setup Program" in the *User's Guide* for instructions.

   ✎ **NOTE:** If you power up or reboot the server module without the USB flash drive connected to the server module, you must reset the options in the System Setup program again.

8. Ensure that you have the USB flash drive connected to the server module.

9. Reboot the server module.

   If the server module fails to boot, see "Getting Help."

When you start the system diagnostics, a message is displayed stating that the diagnostics are initializing. Next, the **Diagnostics** menu appears. The menu allows you to run all or specific diagnostics tests or to exit the system diagnostics.

✎ **NOTE:** Before you read the rest of this section, start the system diagnostics so that you can see the utility on your screen.

System Diagnostics Testing Options

To select an option from the **Diagnostics** menu, highlight the option and press <Enter>, or press the key that corresponds to the highlighted letter in the option.

Table 4-1 provides a brief explanation of testing options.

Table 4-1. System Diagnostics Testing Options

Testing Option	Function
Quick Tests	Performs a quick check of the server module. Select **Test All Devices** and then select **Quick Tests**. This option runs device tests that do not require user interaction. Use this option to quickly identify the source of your problem.
Test One Device	Tests a particular device.
Extended Tests	Performs a more thorough check of the server module. Select **Test All Devices** and then select **Extended Tests**.
Advanced Testing	Checks a particular area of the server module.
Information and Results	Displays test results.
Program Options	Sets various test parameters.
Device Configuration	Displays an overview of the devices in the server module.
Exit to MS-DOS	Exits the diagnostics and returns to the **System Utilities** menu.

Using the Advanced Testing Options

When you select **Advanced Testing** from the **Diagnostics** menu, the main screen of the diagnostics appears and displays the following information:

l   Two lines at the top of the screen identify the diagnostics utility, the version number, and the system's service tag number.

l   The left side of the screen under **Device Groups** lists the diagnostic device groups in the order that they are tested if you select **All** under the **Run Tests** submenu. Press the up- or down-arrow keys to highlight a particular device group. Press the left- or right-arrow keys to select the options on the menu. As you move from one menu option to another, a brief explanation of the highlighted option appears at the bottom of the screen.

l   The right side of the screen under **Devices for Highlighted Group** lists the specific devices within a particular test group.

l   The menu area consists of two lines at the bottom of the screen. The first line lists the menu options that you can select; press the left- or right-arrow key to highlight an option. The second line provides information about the highlighted option.

For more information about a device group or device, highlight the Help option and press <Enter>. Press <Esc> to return to the previous screen.

Error Messages

When you run a system diagnostics test, you may receive an error message during testing. Record the message on a copy of the Diagnostics Checklist. For a copy of the Diagnostics Checklist and instructions for obtaining technical assistance, see "Getting Help."

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Troubleshooting Your System

Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

- ● Safety First—For You and Your System
- ● Start-Up Routine
- ● Checking the Equipment
- ● Troubleshooting External Connections
- ● Responding to a Systems Management Alert Message
- ● Troubleshooting a Wet System
- ● Troubleshooting a Damaged System
- ● Troubleshooting System Components
- ● Troubleshooting Server Module Components

Safety First—For You and Your System

To perform certain procedures in this document, you must remove the system cover and work inside the system. While working inside the system, do not attempt to service the system except as explained in this guide and elsewhere in your system documentation.

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

Start-Up Routine

Look and listen during the system's start-up routine for the indications described in Table 5-1.

Table 5-1. Start-Up Routine Indications

Look/listen for:	Action
An error message displayed on the monitor	See "Server Module Messages" in "Indicators, Codes, and Messages."
A series of beeps emitted by the system	See "Server Module Beep Codes" in "Indicators, Codes, and Messages."
Alert messages from the systems management software	See the systems management software documentation.
The monitor's power indicator	See "Troubleshooting the Video Subsystem."
The keyboard indicators	See "Troubleshooting the Keyboard."
The USB diskette drive activity indicator	See "Troubleshooting USB Devices."
The USB optical drive activity indicator	See "Troubleshooting USB Devices."
The hard-drive activity indicator	See "Troubleshooting Hard Drives."
An unfamiliar constant scraping or grinding sound when you access a drive	See "Getting Help."

Checking the Equipment

This section provides troubleshooting procedures for external devices attached to the system, such as the monitor, keyboard, or mouse. Before you perform any of the procedures, see "Troubleshooting External Connections."

Troubleshooting External Connections

Loose or improperly connected cables are the most likely source of problems for the system, monitor, and other peripherals (such as a printer, keyboard, mouse, or other external device). Ensure that all external cables are securely attached to the external connectors on your system. See Figure 2-3 for the front-panel connectors on your system and Figure 2-5 for the back-panel connectors.

Troubleshooting the Video Subsystem

Problem

- l   Monitor or monitor cable

- l   Keyboard/video/mouse (KVM) custom cable

- l   KVM module

- l   Server module

Action

1. Ensure that the server module(s) is turned on.

2. Check the monitor connection to the custom cable.

   Try swapping monitor cables if another monitor cable is available.

3. Check the custom cable connection to either the front-panel custom-cable connector on the server module or the back-panel KVM module.

4. If the monitor does not function from the back-panel KVM module, ensure that the KVM selection indicator on the front panel of the server module is green. If not, press the KVM selection button. See Figure 2-3.

   ![NOTE icon] **NOTE:** See "KVM Modules" in " Indicators, Codes, and Messages" for instructions on how to select a server module from the keyboard connected to the KVM module.

5. If two or more server modules are installed in the chassis, press the KVM selection button on a different server module.

   ![NOTE icon] **NOTE:** After pressing the KVM selection button, allow approximately two seconds for the KVM functions to change to a different server module.

   If the monitor is connected to the back-panel KVM module and works with another server module, the first server module may need to be reseated. See "Server Modules" in "Installing System Options." If reseating the server module does not help, the server module may be faulty. See "Getting Help."

6. Swap the monitor with a known-working monitor and repeat step 4 and step 5.

   If the monitor does not work when connected to either the front-panel custom cable or to the back-panel custom cable, the server module may be faulty. See "Getting Help."

   If the monitor works in the back-panel custom cable and not the front-panel custom cable, the front-panel custom cable may be faulty. See "Getting Help."

   If the monitor works in the front-panel custom cable and not the back-panel custom cable, the KVM module or the back-panel custom cable may be faulty. See "Getting Help."

Troubleshooting the Keyboard

![NOTE icon] **NOTE:** USB keyboard devices can be connected only to the front-panel custom cable, and PS/2 keyboard devices can be connected only to the back-panel custom cable.

Problem

- l   A symptom of a keyboard problem is indicated by a system message

- l   Keyboard or keyboard cable

- l   Keyboard/Video/Mouse (KVM) custom cable

- l   KVM module

- l   Server module

Action

1. Ensure that the server module(s) is turned on.

2. Check the keyboard connection to the custom cable.

3. Check the custom cable connection to either the front-panel custom cable connector on the server module or to the back-panel KVM module.

4. If you are connecting a keyboard to the front-panel custom cable connector, test the keyboard and front-panel custom cable on a different server module, if available.

5. If the keyboard does not function from the back-panel KVM module, ensure that the KVM selection indicator on the front panel of the server module is

green. If not, press the KVM selection button. See Figure 2-3.

6. If two or more server modules are installed in the chassis, press the KVM selection button on a different server module.

   ![NOTE icon] **NOTE:** After pressing the KVM selection button, allow approximately two seconds for the KVM functions to change to a different server module.

   If the keyboard is connected to the back-panel KVM module and works with another server module, the first server module may need to be reseated. See "Server Modules" in "Installing System Options." If reseating the server module does not help, the server module may be faulty. See "Getting Help."

7. Swap the keyboard with a known-working keyboard and repeat step 5 and step 6. If the keyboard does not work with any server module, see "Getting Help."

Troubleshooting the Mouse

![NOTE icon] **NOTE:** USB mouse devices can be connected only to the front-panel custom cable and PS/2 mouse devices can be connected only to the back-panel custom cable.

Problem

l A symptom of a mouse problem is indicated by a system message

l Mouse or mouse cable

l Keyboard/Video/Mouse (KVM) custom cable

l Server module

Action

1. Ensure that the server module(s) is turned on.

2. Check the mouse connection to the custom cable

3. Check the custom cable connection to the either the front-panel custom cable connector on the server module or to the back-panel KVM module.

4. If you are connecting a mouse to the front-panel custom cable connector, test the mouse and front-panel custom cable on a different server module, if available.

5. If the mouse does not function from the back-panel KVM module, ensure that the KVM selection indicator on the front panel of the server module is green. If not, press the KVM selection button. See Figure 2-3.

   ![NOTE icon] **NOTE:** See "KVM Modules" in " Indicators, Codes, and Messages" for instructions on how to select a server module from the keyboard connected to the KVM module.

6. If two or more server modules are installed in the chassis, press the KVM selection button on a different server module.

   ![NOTE icon] **NOTE:** After pressing the KVM selection button, allow approximately two seconds for the KVM functions to change to a different server module.

   If the mouse is connected to the back-panel KVM module and works with another server module, the first server module may need to be reseated. See "Server Modules" in "Installing System Options." If reseating the server module does not help, the server module may be faulty. See "Getting Help."

7. Swap the mouse with a known-working mouse and repeat step 5 and step 6. If the mouse does not work with any server module, see "Getting Help."

Troubleshooting USB Devices

![NOTE icon] **NOTE:** USB devices can be connected only to the front-panel custom cable. Total length of a USB cable should not exceed 3 m (9.8 ft).

Problem

l A symptom of a USB problem is indicated by a system message

l USB device or USB device cable

l Keyboard/Video/Mouse (KVM) custom cable

l Server module

Action

1. Ensure that the server module(s) is turned on.

2. Check the USB device connection to the front-panel custom cable.

3. Check the custom cable connection to the front-panel custom-cable connector.

4. Swap the USB device with a known-working USB device.

5. If another server module is installed, connect the USB device to that server module. If the USB device works with a different server module, the first server module may be faulty. See "Getting Help."

Responding to a Systems Management Alert Message

The Dell™ Remote Access Controller/Modular Chassis (DRAC/MC) management applications monitor critical system voltages and temperatures, and the cooling fans in the system. For information about the DRAC/MC alert messages, see the *Configuration Guide*.

Troubleshooting a Wet System

Problem

l Liquid spills

l Splashes

l Excessive humidity

Action

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Turn off the system.

2. Disconnect the power supplies from the electrical outlets.

⚠ **CAUTION: Wait until all of the indicators on the power supplies turn off before preceding.**

3. Remove all the server modules. See "Removing a Server Module" in "Installing System Options."

4. Remove the DRAC/MC module. See "Removing a DRAC/MC Module" in "Installing System Options."

5. Remove all I/O modules installed in the system. See "Removing an I/O Module" in "Installing System Options."

6. Remove all the fan modules. See "Removing a Fan" in "Installing System Options."

7. Remove all the power supply modules. See "Removing a Power Supply Module" in "Installing System Options."

8. Let the system dry thoroughly for at least 24 hours.

9. Install all the power supply modules. See "Installing a Power Supply Module" in "Installing System Options."

10. Install all the fan modules. See "Installing a Fan" in "Installing System Options."

11. Install all the I/O modules in the system. See "Installing an I/O Module" in "Installing System Options."

12. Install the DRAC/MC module. See "Installing a DRAC/MC Module" in "Installing System Options."

13. Install all the server modules. See "Installing a Server Module" in "Installing System Options."

14. Reconnect the power supply modules to their electrical outlets.

   If the system does not start up properly, see "Getting Help."

15. Run the Server Administrator diagnostics to confirm that the system is working properly (see "Running System Diagnostics").

   If the tests fail, see "Getting Help."

Troubleshooting a Damaged System

Problem

   l   System was dropped or damaged

Action

1. Ensure that the following components are properly installed and connected:

      l   DRAC/MC module

      l   I/O modules

      l   Power supply modules

      l   Fan modules

      l   Server modules

2. Ensure that all cables are properly connected.

3. Ensure that all components are properly installed and free from damage.

4. Run the online diagnostics. See "Running System Diagnostics."

   If the tests fail, see "Getting Help."

Troubleshooting System Components

The following procedures describe how to troubleshoot the following components:

   l   Power supply modules

   l   Fan modules

   l   DRAC/MC module

   l   Network switch module

Troubleshooting Power Supply Modules

Problem

   l   A power supply module is not operating properly

Action

⊘ **NOTICE:** The power-supply modules are hot-pluggable. Remove and replace only one power-supply module at a time in a system that is turned on. Leave a failed power-supply module installed in the chassis until you are ready to replace it. Operating the system with a power-supply module removed for extended periods of time can cause the system to overheat.

✍ **NOTE:** The 1200-W power supply modules require 180–264 V, and the 2100-W power supply modules require 170-264 V to operate. If they are plugged into 110-V electrical outlets, the power supply modules do not power up.

1. Locate the faulty power supply module.

The power supply's fault indicator is amber if AC power is available. See Figure 2-6.

If no indicators are lit, ensure that AC power is available from the electrical outlet and that the power cable is properly connected to the power supply module.

2. Install a new power supply. See "Installing a Power Supply Module" in "Installing System Options."

   ![NOTE icon] **NOTE:** After installing a new power supply, allow several seconds for the system to recognize the power supply and determine whether it is working properly. The power supply DC power indicator turns green if the power supply is functioning properly. See Figure 2-6.

3. If the problem is not resolved, see "Getting Help" for information about obtaining technical assistance.

Troubleshooting Fan Modules

Problem

l   A fan is not operating properly

Action

![NOTICE icon] **NOTICE:** The fan modules are hot-pluggable. Remove and replace only one fan module at a time in a system that is turned on. Operating the system with a fan module removed for extended periods of time can cause the system to overheat.

1. Locate the faulty fan.

   Each fan module has indicators that identify a faulty fan. See Figure 2-7.

2. Reseat the faulty fan. See "Fan Modules" in "Installing System Options."

3. If the problem is not resolved, install a new fan. See "Fan Modules" in "Installing System Options."

4. If the new fan does not operate. see "Getting Help."

Troubleshooting the DRAC/MC Module

Problem

l   DRAC/MC module is not operating properly

l   System message indicates a problem with the DRAC/MC module

l   DRAC/MC module cable connections

Action

![NOTE icon] **NOTE:** To eliminate the possibility of a hardware problem with the module or its attaching devices, first ensure that the module is properly initialized and configured. See the *Configuration Guide* and the documentation that came with the module before performing the following procedure.

1. Reseat the DRAC/MC module and see if the DRAC/MC module fault indictor turns off. See "DRAC/MC Module" in "Installing System Options." See Figure 2-11 for more information about the module's indicators.

2. If another DRAC/MC module is available, swap the two modules.

3. If the fault indicator is off, but the serial device connected to the serial port is not properly operating, go to step 4. If the fault indicator is off, but the network management device connected to the network interface connector port is not properly operating, go to step 8.

4. Ensure that the serial cable is a null modem cable.

5. Reseat the serial cable to the serial connector on the DRAC/MC module and to the serial device.

6. Connect a known-working null-modem serial cable between the DRAC/MC module and the serial device.

7. Connect a known-working serial device to the DRAC/MC module.

   If the serial device and DRAC/MC module still do not communicate with each other, see "Getting Help."

8. Reseat the network cable to the network connector on the DRAC/MC module and to the network device.

9. Connect a known-working network cable between the DRAC/MC module and the network device.

10. Connect a known-working network device to the DRAC/MC module.

   If the network device and DRAC/MC module still do not communicate with each other, see "Getting Help."

Troubleshooting a Network Switch Module

Problem

- System cannot communicate with the network
- Network cable connections
- Network switch module and hub configuration settings

Action

NOTE: To eliminate the possibility of a hardware problem with the module or its attaching devices, first ensure that the module is properly initialized and configured. See the *Configuration Guide* and the documentation that came with the module before performing the following procedure.

1. Check the appropriate indicator on the network switch module. See "I/O Connectivity" in "Indicators, Codes, and Messages" for a description the indicators for each type of network switch module.

   - If the link indicator displays an error condition, check all cable connections.

      See "I/O Connectivity" in "Indicators, Codes, and Messages" for the link indicator error conditions for your particular network switch module.

   - Try another connector on the external switch or hub.

   - If the activity indicator does not light, replace the network switch module. See "Chassis I/O Module."

- If the server module requires a daughter card for a particular network switch module, ensure that the appropriate daughter card is installed. If so, reseat the daughter card. See "Daughter Card" in "Installing System Options."

   If the network link indicator on the server module is green, then the server module has a valid link to the appropriate network switch module.

3. Ensure that the appropriate drivers are installed and the protocols are bound.

Troubleshooting Server Module Components

The following procedures describe how to troubleshoot the following components:

- Memory
- Hard drives
- Microprocessors
- Server module board
- Battery

Inside the Server Module

Figure 5-1 shows an interior view of the major components of the server module.

Figure 5-1. Inside the Server Module
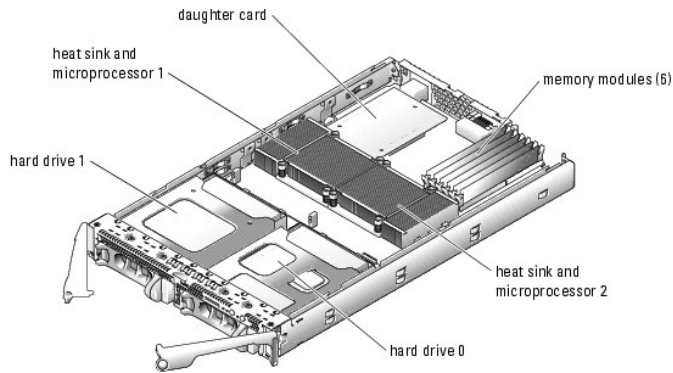
The server module board contains up to two microprocessors, six memory modules, interface connectors for the hard drives, interface connectors for a daughter card, and a dual-Gigabit NIC. Up to two SCSI hard drives connect to a controller on the server module board. If two hard drives are installed, you have the option of enabling integrated mirroring. See the *Configuration Guide*. This feature enables you to have RAID 1 capabilities.

During an installation or troubleshooting procedure, you may be required to change a switch setting. For more information, see "DIP Switch Settings and Connectors."

Troubleshooting Server Module Memory

Problem

l   Faulty memory module

l   Faulty server module board

Action

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

📝 **NOTE:** Before performing the following procedure, ensure that you have installed the memory modules according to the "General Memory Module Installation Guidelines" in "Installing System Options."

1.   Restart the server module.

    a.   Press the power button once to turn off the server module.

    b.   Press the power button again to apply power to the server module.

        If no error messages appear, go to step 8.

2.   Enter the System Setup program and check the system memory setting. See "Using the System Setup Program" in your *User's Guide*.

    If the amount of memory installed matches the system memory setting, go to step 8.

3.   Remove the server module. See "Removing a Server Module" in "Installing System Options."

4.   Open the server module. See "Opening the Server Module" in "Installing System Options."

5.   Reseat the memory modules in their sockets. See "Installing Memory Modules" in "Installing System Options."

6.   Close the server module. See "Closing the Server Module" in "Installing System Options."

7.   Install the server module. See "Installing a Server Module" in "Installing System Options."

8.   Run the system memory test in the system diagnostics. See "Running System Diagnostics."

    If the test fails, see "Getting Help."

Troubleshooting Hard Drives

Problem

- l   Device driver error

- l   Hard drive or hard-drive carrier

- l   Device drivers

Action

⚠️ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

⊘ **NOTICE:** This troubleshooting procedure can destroy data stored on the hard drive. Before you proceed, back up all the files on the hard drive, if possible.

1. Run the SCSI controllers test and the hard drive tests in system diagnostics. See "Running System Diagnostics."

   If the tests fail, continue to step 2.

2. Restart your server module and enter the System Setup program. See "Using the System Setup Program" in your *User's Guide.*

3. Ensure that the SCSI channel is enabled, and restart the server module.

4. Ensure that any required device drivers are installed and are configured correctly.

   For information about installing device drivers, see the "Using the Dell OpenManage Server Assistant" in your *User's Guide.*

⊘ **NOTICE:** Installing a hard drive into another bay will break the mirror if the mirror state is optimal.

5. Remove the hard drive and install it in the other drive bay. See "Hard Drives" in "Installing System Options."

6. If the problem is resolved, reinstall the hard drive in the original bay. See "Hard Drives" in "Installing Drives."

   If the hard drive functions properly in the original bay, the drive carrier could have intermittent problems. Replace the drive carrier.

7. If the hard drive is the boot drive, ensure that the drive is configured and connected properly. See "Configuring the Boot Drive" in "Installing System Options."

8. Partition and logically format the hard drive.

9. If possible, restore the files to the drive.

   If the problem persists, see "Getting Help."

Troubleshooting Microprocessors

Problem

- l   System message indicates a problem with the microprocessor

- l   Heat sink is not installed for the microprocessor

Action

⚠️ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Remove the server module. See "Removing a Server Module" in "Installing System Options."

2. Open the server module. See "Opening the Server Module" in "Installing System Options."

3. Ensure that the microprocessor(s) and heat sink(s) are properly installed. See "Microprocessors" in "Installing System Options."

   If your system only has one microprocessor installed, ensure that it is installed in socket PROC_1. See Figure A-3.

4. Close the server module. See "Closing the Server Module" in "Installing System Options."

5. Install the server module. See "Installing a Server Module" in "Installing System Options."

6. Run **Quick Tests** in the system diagnostics. See "Running System Diagnostics."

   If the tests fail or the problem persists, see "Getting Help."

Troubleshooting the Server Module Board

Problem

l   System message indicates a problem with the server module board

Action

⚠ **CAUTION: Only trained service technicians are authorized to remove the system cover and access any of the components inside the system. See your *Product Information Guide* for complete information about safety precautions, working inside the computer, and protecting against electrostatic discharge.**

1. Turn off the server module.

2. Remove and reinstall the server module. See "Server Modules" in "Installing System Options."

3. Turn on the server module.

4. Run the system board test in the system diagnostics. See "Running System Diagnostics."

   If the tests fail, see "Getting Help."

Troubleshooting the Server Module Battery

Problem

l   System message indicates a problem with the battery

l   System Setup program loses system configuration information

l   System date and time do not stay current

Each server module contains a battery, which maintains the server module configuration, date, and time information in NVRAM when you turn off the server module. You may need to replace the battery if an incorrect time or date is displayed during the boot routine.

You can operate the server module without a battery; however, the server module configuration information maintained by the battery in NVRAM is erased each time you remove power from the server module. Therefore, you must re-enter the system configuration information and reset the options each time the server module boots until you replace the battery.

Action

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Re-enter the time and date through the System Setup program. See "Using the System Setup Program" in your *User's Guide*.

2. Remove the server module for at least one hour. See "Removing a Server Module" in "Installing System Options."

3. Install the server module. See "Installing a Server Module" in "Installing System Options."

4. Enter the System Setup program.

   If the date and time are not correct in the System Setup program, replace the battery. See "Server Module Battery" in "Installing System Options."

   If the problem is not resolved by replacing the battery, see "Getting Help."

● **NOTICE:** If the server module is turned off for long periods of time (for weeks or months), the NVRAM may lose its system configuration information. This situation is caused by a defective battery.

✎ **NOTE:** Some software may cause the server module's time to speed up or slow down. If the server module seems to operate normally except for the time kept in the System Setup program, the problem may be caused by software rather than by a defective battery.

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Installing System Options

Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

- ● Power Supply Modules
- ● Fan Modules
- ● DRAC/MC Module
- ● KVM Module
- ● Chassis I/O Module
- ● Server Modules
- ● Removing and Installing Server Module Components

The procedures in this section describe how to remove and install system components and server module components, including:

- l Power supply modules

- l Fan Modules

- l Dell™ Remote Access Controller/Modular Chassis (DRAC/MC) module

- l KVM modules

- l Network switch modules

- l Server modules

Power Supply Modules

Your system contains up to four hot-pluggable power supply modules that are accessible from the system chassis back panel.

> **NOTE:** 2100-W power supply modules require 170-264 V to operate; 1200-W power supply modules (systems sold prior to April 2005) require 180–264 V to operate. If they are plugged into 110-V electrical outlets, the power supply modules will not power up.

> **NOTE:** In addition to supplying power to the system, the power supply modules also have internal fans that provide thermal cooling for the server modules. A power supply module must be replaced if an internal fan failure occurs.

System Power Guidelines

The Dell™ Remote Access Controller/Modular Chassis (DRAC/MC) module controls the power distribution to the chassis and the server modules. The DRAC/MC is programmed to allocate the theoretical maximum power of a chassis with all back-panel modules installed and the theoretical maximum power of a fully-loaded server module for power management and protection purposes. Actual power usage depends on a system's particular configuration; for example, the number of modules installed in the chassis back panel; the number of processors, memory modules, and hard drives installed in a server module; and the number of server modules installed in the chassis.

The number of installed power supply modules determine if your system is redundant. Your system has one of the following configurations:

- l Two 2100-W power supply modules, which do not provide redundancy if one power supply module fails

- l Four 2100-W power supply modules, which provide redundancy if one power supply module fails

- l Three 1200-W power supply modules (systems sold prior to April 2005), which do not provide redundancy if one power supply module fails

- l Four 1200-W power supply modules (systems sold prior to April 2005), which provide redundancy if one power supply module fails

> **NOTE:** Depending on a non-redundant system's particular configuration, it is possible for some of the server modules to continue to operate even though a power supply module fails. If this occurs, and the server module that you want to operate is off, then power down the operating server modules until the desired server module powers up.

> In addition, if you install a new server module and it does not power up, ensure that your system meets the normal operating-power configurations listed above. Only those configurations support a fully-loaded system.

> **NOTE:** The wattage of a power supply module is listed on its regulatory label.

Removing a Power Supply Module

> **NOTICE:** The power supply modules are hot-pluggable. Remove and replace only one power supply module at a time in a system that is turned on.

1. Disconnect the power cord from the power supply module.

2. Press down on the power supply module release tab. See Figure 6-1.

3. Rotate the power supply module handle down to eject the power supply module.

4. Slide the power supply module out of the chassis.

Figure 6-1. Removing and Installing a Power Supply Module
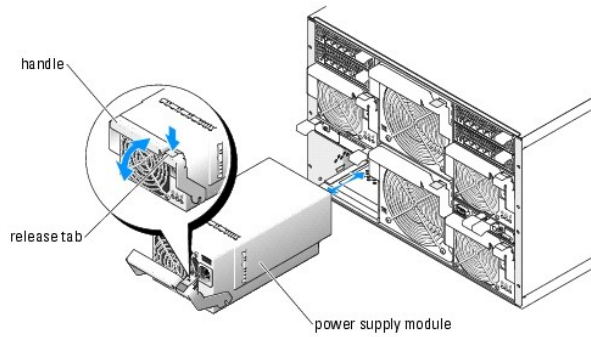
Installing a Power Supply Module

⬤ **NOTICE:** Depending on the type of power supply that you are installing, the back panel of the 2100-W power supply fits flush against the back of the chassis when it is proper seated, as shown in Figure 6-1. The back panel of the 1200-W power supply modules protrude approximately one-half inch from the back of the chassis.

1. Ensure that the power-supply module handle is fully down and then slide the power supply module into the chassis until it is fully seated. See Figure 6-1.

2. Rotate the power-supply module handle upward until its release tab snaps securely into place.

3. Plug a power cable into the power supply module.

Fan Modules

Your system contains up to four system fans (two sets of redundant fans) contained in two hot-pluggable fan modules. Each fan module has system fan indicators on its back panel that identify the status of each of its system fans. See Figure 2-7.

Removing a Fan

⬤ **NOTICE:** After a fan module is removed from the system, replace it immediately to ensure proper cooling.

1. Identify the failed system fan using the back-panel fan module indicators. See Figure 2-7.

   Fan 1 is the fan closest to the chassis midplane; Fan 2 is the fan closest to the fan-module handle.

2. Remove the fan module:

   a. Press down on the fan-module release tab. See Figure 6-2.

   b. Rotate the fan-module handle down to eject the fan module.

   c. Slide the fan module out of the chassis.

Figure 6-2. Removing and Installing a Fan Module
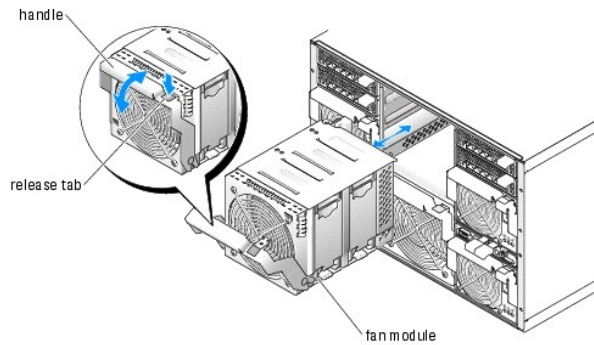
3. Remove the failed fan:

    a. Pull up the fan-release tab. See Figure 6-3.

    b. Lift up the fan lever.

    c. Pull out the fan from the fan module.

Figure 6-3. Removing and Installing a System Fan
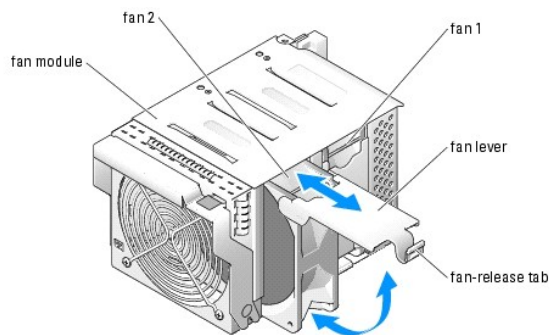
Installing a Fan

1. Orient the replacement fan as shown in Figure 6-3.

2. Install the fan:

    a. Slide the fan into the fan module.

    b. Lower its fan lever.

    c. Press the bottom of the lever until it snaps securely into place.

3. Slide the fan module into the chassis until it is fully seated. See Figure 6-2.

4. Rotate the fan-module handle upward until its release tab snaps securely into place.

DRAC/MC Module

Among other controlling features, the DRAC/MC controls power to the system. When a functional DRAC/MC module is not installed, newly-installed server modules cannot be powered on and presently-installed servers modules cannot have their power cycled.

Removing a DRAC/MC Module

1. Disconnect any cables attached to the DRAC/MC module.

2. Press in the bottom of the release tab and pull out the release lever. See Figure 6-4.

3. Slide the DRAC/MC module out of the chassis.

Installing a DRAC/MC Module

1. Ensure that the DRAC/MC module release lever is fully extended. See Figure 6-4.

2. Slide the module into the chassis until it is fully seated.

3. Close the release lever until it snaps securely into place.

4. Reconnect the cables that were attached to the module.

Figure 6-4. Removing and Installing a DRAC/MC Module

DRAC/MC Version 1.1 (or Later) Module

If you have a DRAC/MC version 1.1 (or later) module installed, ensure that you read that product's **readme.txt** file. It contains updated information, including system indicator behavior in certain conditions.

Important I/O Configuration Considerations

⚠️ **CAUTION: Data loss can result if you perform certain actions on a system in which the I/O bays have not been configured correctly. Specifically, bay 2 should have an I/O module installed only if an identical module is present in bay 1, and bay 4 should have an I/O module installed only if an identical module is present in bay 3. Except in these cases (or in a case where you temporarily need to swap a failed I/O module in bay 1 or 3), bays 2 and 4 should be unoccupied.**

Unless your system is configured according to these guidelines, do not perform any of the following actions:

l Upgrade DRAC/MC firmware

l Issue a software reset command for a DRAC/MC, such as racadm racreset

l Reseat a DRAC/MC module

l Cause a DRAC/MC failover event, such as removing the network cable from the primary DRAC/MC

Performing any of these actions will power off and stop traffic on the bay 2 or bay 4 I/O module, resulting in data loss.

When initiated, the DRAC/MC version 1.1 (or later) firmware algorithm must find a module in bay 1 before bay 2 and a module in bay 3 before bay 4. Otherwise, the module in bay 2 or bay 4 will be powered off if you perform a firmware upgrade procedure on the DRAC/MC, cause a DRAC/MC failover, or reset the DRAC/MC.

See the current *Dell Remote Access Controller/Modular Chassis User's Guide* at **support.dell.com** for more information about configuring your DRAC/MC system.

Redundancy Support

If you are adding a DRAC/MC version 1.1 (or later) module to a system to enable redundancy, the firmware levels of both DRAC/MC modules must be version 1.1. If the DRAC/MC module currently in the system is version 1.0, you must upgrade the firmware of the current module to version 1.1 *prior* to installing the new DRAC/MC version 1.1 (or later) module.

📝 **NOTE:** A DRAC/MC module's firmware version is displayed on its web-based GUI or by typing the command `getsysinfo` or `racadm getsysinfo`.

📝 **NOTE:** DRAC/MC version 1.1 (or later) firmware uses a different MAC address than the MAC address reported by DRAC/MC version 1.0 firmware. Therefore, a DHCP-assigned dynamic IP address may change after updating to the DRAC/MC version 1.1 firmware.

See the latest *Dell Remote Access Controller/Modular Chassis User's Guide* at **support.dell.com** for more information about firmware updates and installing redundant DRAC/MC modules. This guide also provides complete instructions on how to set up and operate that version of the module.

KVM Module

Your system includes one hot-pluggable KVM module. One of three types of KVM modules may be installed: an Avocent Analog KVM switch module, an Avocent Digital Access KVM switch module, or a basic KVM switch module (systems sold prior to April 2005). All three modules enable you to connect a PS/2-compatible keyboard and mouse and a video monitor to the system, using a custom cable provided with the system. See "KVM Modules" in "Indicators, Codes, and Messages" for more information about the features of these modules. See your system *Configuration Guide* for instructions on how to select a server module from the keyboard connected to the KVM module.

Removing a KVM Module

1. Disconnect any cables attached to the KVM module.

2. Remove the Phillips screw that secures the release lever to the module. See Figure 6-5.

   ![NOTE icon] **NOTE:** This step depends on the type of KVM module that you purchased; some KVM modules do not require or include a screw.

3. Pull out the release lever and slide the KVM module out of the chassis.

Installing a KVM Module

1. Ensure that the KVM module release lever is fully extended. See Figure 6-5.

2. Slide the module into the chassis until it is fully seated.

3. Close the release lever until it snaps securely into place.

4. Reinstall the Phillips screw that secures the release lever to the module.

   ![NOTE icon] **NOTE:** This step depends on the type of KVM module that you purchased; some KVM modules do not require or include a screw.

5. Reconnect the custom cable to the KVM module and connect the keyboard, monitor, and mouse to the custom cable.

Figure 6-5. Removing and Installing a KVM Module
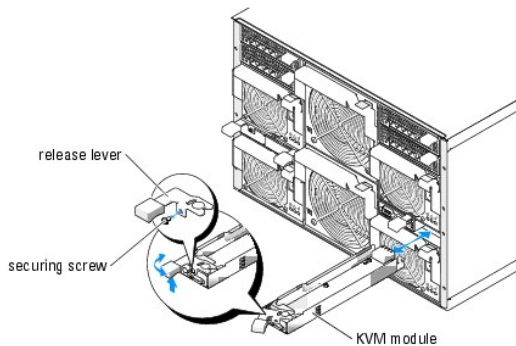
Figure 6-6 shows the basic cabling configuration for a KVM module. For information on configuring the KVM module, see the *Configuration Guide* provided with your system.

Figure 6-6. KVM Module Basic Configuration
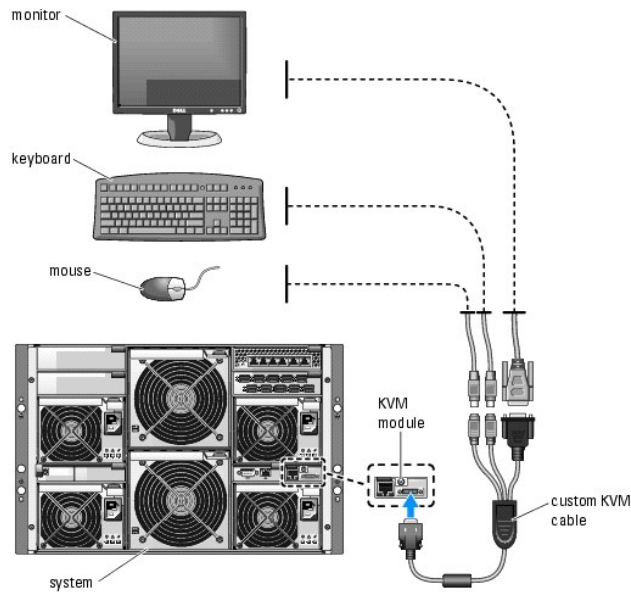
Tiering a Avocent Analog KVM Switch or Avocent Digital Access KVM Switch From a Analog KVM Switch

Both Avocent KVM switches can be tiered from analog KVM switches such as the Dell180ES and 2160ES, as well as other products that support the On-Screen Configuration and Activity Reporting (OSCAR) interface.

Before connecting the KVM switch to a supported analog switch, you must set the KVM switch to display in slot order, and set the **Screen Delay Time** to 1 or more seconds:

1. Press <Print Screen> to launch the KVM Switch OSCAR.

2. Click **Setup > Menu**. The **Menu** dialog box appears.

3. Select **Slot** to display servers numerically by slot number.

4. Enter a screen delay time of at least 1 second.

5. Click **OK**.

Setting the Screen Delay time to 1 second allows you to soft switch to a server without launching OSCAR.

NOTE: Soft switching allows you to switch servers using a hot key sequence. You can soft switch to a server by pressing <Print Screen> and then typing the first few characters of its name or number. If you have a Delay Time set and you press the key sequences before that time has elapsed, OSCAR will not display.

To configure the analog switch:

1. Press <Print Screen> to open the OSCAR **Main** dialog box.

2. Click **Setup > Devices** > **Device Modify**.

3. Select the 10-port option to match the number of slots in your system. If the 10-port option is not available, select the 16-port option.

4. Click **OK** to exit OSCAR.

5. Press <Print Screen> to verify that the settings have taken effect. The slot number of the server module to which the KVM switch is now attached should be expanded to display each of the slot locations of the server modules in the system. For instance, if the KVM switch is attached to slot 1, it would now be displayed as 01-01 to 01-10.

To connect the Avocent KVM switch to a supported analog switch:

1. Connect the keyboard, video, and mouse cable to the analog switch.

2. Connect the other end of this cable to the custom cable.

3. Connect the custom KVM cable to the KVM port of the KVM switch (see Figure 6-7.)

Figure 6-7. Avocent Analog or Digital KVM Switch Tiered from an Analog KVM Switch.
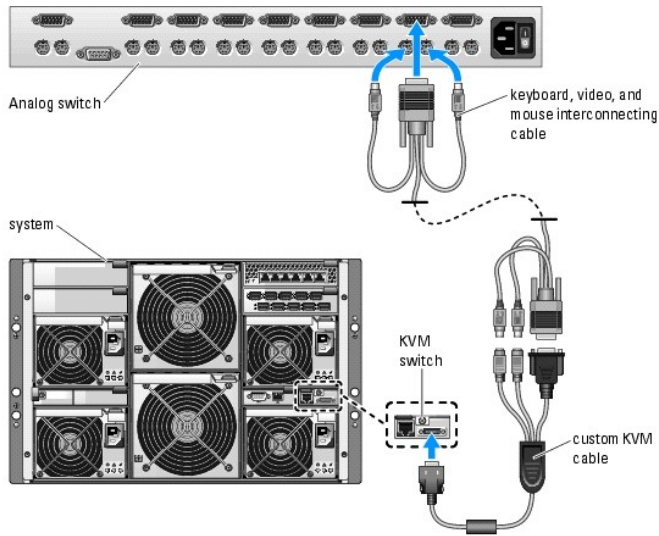
4. Connect both the analog switch and the system to an appropriate power source.

5. Power up the system

6. Power up the analog switch.

NOTE: If the analog switch is powered up before the system, it may result in only one server module displaying in the analog switch OSCAR, instead of 10.

NOTE: In addition, to the steps outlined above, some analog switches may require you to perform additional steps to ensure that the KVM switch server modules appear in the analog switch OSCAR. See the analog switch documentation for additional information.

Tiering an Avocent Analog KVM Switch From a Dell Console Switch

To tier an Avocent Analog KVM switch from a Dell 2161DS, 180AS, or 2160AS console switch, connect the ACI port on the rear of the Avocent Analog KVM switch to one of the 16 ARI ports on the back of the Dell console switch (see Figure 6-8).

NOTE: Do not connect the KVM switch ACI port to a LAN device such as a network hub. Doing so may result in equipment damage.

Figure 6-8. Tiering an Avocent Analog KVM Switch from a Dell Console Switch
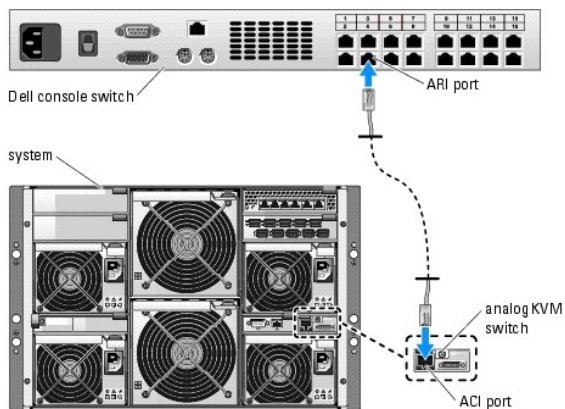
Once the KVM switch is connected, the server modules appear in OSCAR. The Dell console switch will automatically configure the slots in the KVM menu.

NOTE: Once the local system is set up, you must also resynchronize the server list from the Remote Console Switch software in order to see the list of server modules. See "Resynchronizing the Server List at the Remote Client Workstation."

Tiering an Avocent Digital Access KVM Switch From a Dell Console Switch

To tier a Avocent Digital Access KVM switch module from a Dell 2161DS, 180AS, or 2160AS console switch:

1. Connect one end of a CAT5 cable to an ARI port on the console switch (see Figure 6-9.)

2. Connect the other end of the CAT5 cable to a Server Interface Pod (SIP.)

3. Connect the local KVM cable to the local KVM port of the KVM switch and then to the SIP.

4. Once the KVM switch is connected, the server modules appear in OSCAR.

Figure 6-9. Tiering a Avocent Digital Access KVM Switch from a Dell Console Switch
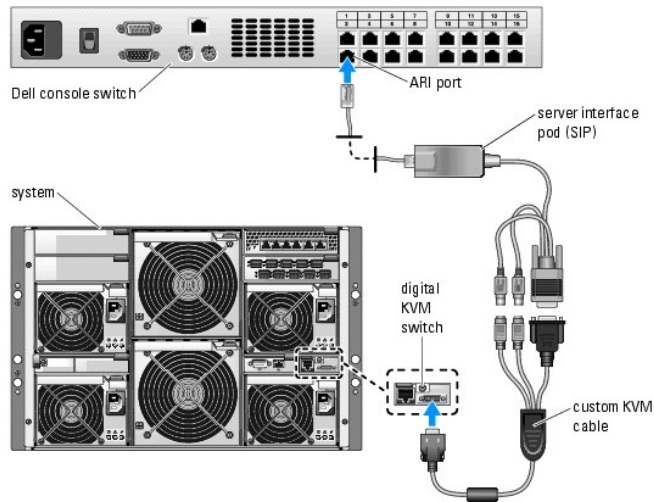
Once connected, the Dell console switch will automatically configure the slots in the KVM menu.

NOTE: Once the local system is set up, you must also resynchronize the server list from the Remote Console Switch software in order to see the list of server modules. See "Resynchronizing the Server List at the Remote Client Workstation."

Resynchronizing the Server List at the Remote Client Workstation

Once the KVM switch is connected, the server modules appear in OSCAR. You now need to resynchronize the servers on any remote workstation to ensure that the server modules are now available to any remote users that are connected to the console switch through the Remote Console Switch software.

NOTE: This procedure only resynchronizes one remote client workstation. With multiple client workstations, save the resynchronized local database and load it into the other client workstations to ensure consistency.

To resynchronize the server listing:

1. Click **Resync** in the **Server** category of the Management Panel (MP).

   The Resync Wizard launches.

2. Click **Next**.

   A warning message displays indicating that the database will be updated to match the current configuration of the console switch. Your current local database names will be overridden with the switch names. To include unpowered SIPs in the resynchronization, click to enable the **Include Offline SIPs** check box.

3. Click **Next**.

   A **Polling Remote Console Switch** message box appears with a progress bar indicating that the switch information is being retrieved.

4. If no changes were detected in the appliance, a completion dialog box appears with this information.

   If server changes were detected, then the **Detected Changes** dialog box will be displayed. Click **Next** to update the database.

5. If a cascade switch was detected, the **Enter Cascade Switch Information** dialog box appears. Select the type of switch connected to the appliance from

the drop-down list. If the type you are looking for is not available, you can add it by clicking **Add**.

6. Click **Next**. The completion dialog box appears.

7. Click **Finish** to exit.

8. Start up the analog switch and the system.

Chassis I/O Module

A variety of I/O modules, such as Fibre Channel pass-through, Fiber Channel switch, Ethernet pass-through, Infiniband pass-through, and PowerConnect 5316M Ethernet switch modules are available for your system. Some I/O modules also require a supporting daughter card that must be installed inside each server module that communicates with that particular I/O module. The system can accommodate up to four hot-pluggable I/O modules.

You do not have to turn off the system to replace an I/O module of the same type; however, your network connectivity does not return until the replacement module is installed and initialized.

I/O Module Placements

The back panel has four bays for I/O modules and are labeled IO/1, IO/2, IO/3, and IO/4 (see Figure 2-5). PowerConnect 5316M Ethernet switch modules or Ethernet pass-through modules must be installed in either bay IO/1 or IO/2. All other types of matching I/O modules can be installed in IO/3 and IO/4. See " Guidelines for Installing Connectivity Modules" in "Indicators, Messages, and Codes" for guidelines on installing I/O modules.

Bays IO/1 and IO/3 are primary bays and bays IO/2 and IO/4 are secondary bays. The secondary bays provide redundancy or additional connectivity, if desired. If only one type of I/O module is installed, it must be installed in the primary bay.

Removing an I/O Module

1. Disconnect any cables attached to the I/O module.

2. Press in the bottom of the release tab and pull out the release lever. See Figure 6-10.

3. Pull out the release lever and slide the I/O module out of the chassis.

4. If you are removing the I/O module permanently:

   a. If the I/O module uses a supporting daughter card, uninstall the card from inside the server module(s). See "Daughter Card" in "Removing and Installing Server Module Components."

NOTICE: You must install a filler bracket over an empty I/O module slot to maintain Federal Communications Commission (FCC) certification of the system. The brackets also help keep dust and dirt out of the system and aid in proper cooling and airflow inside the system.

   b. Install a metal filler bracket over the empty slot opening.

Figure 6-10. Removing and Installing an I/O Module
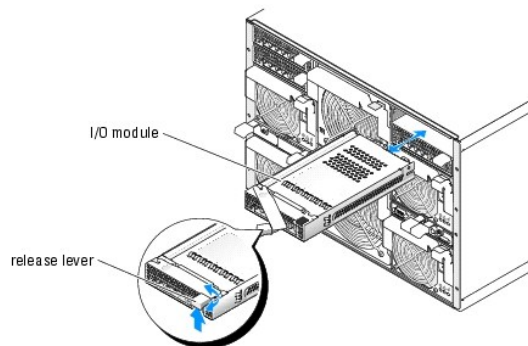
Installing an I/O Module

1. Unpack the I/O module and prepare it for installation.

   For instructions, see the documentation that accompanied the module.

2. Install the I/O module.

> ![NOTE icon] **NOTE:** Bays IO/1 and IO/2 accept only PowerConnect 5316M Ethernet switch modules or Gb Ethernet pass-through modules. If only one module is used, it must be installed in bay IO/1. Bay IO/2 is for a second PowerConnect 5316M Ethernet switch module or Gb Ethernet pass-through module for redundancy.

   a. Ensure that the I/O module release lever is fully extended. See Figure 6-10.

   b. Slide the module into the chassis until it is fully seated.

   c. Close the release lever until it snaps securely into place.

3. If a daughter card(s) was included with the new I/O module, install the daughter card(s). See "Daughter Card" in "Removing and Installing Server Module Components."

> ![NOTE icon] **NOTE:** The daughter card enables a server module to communicate with the corresponding connector number on its appropriate I/O module. For example, server module number 5 must have a Fibre-Channel daughter card installed to communicate with the Fibre Channel pass-through module connector number 5 (primary and secondary bays).

4. Reconnect any cables that must be attached to the module.

   See the documentation that accompanied the I/O module for information about its cable connections.

Server Modules

Your system can include up to 10 hot-pluggable server modules. Each server module can contain up to two microprocessors, two hard drives, six memory modules, and one daughter card.

Removing a Server Module

1. Ensure that the server module's power is off.

   When a server module is powered off, its front-panel power indicator is amber. See Figure 2-3.

2. Press in the release latch on the inside of the upper handle. See Figure 6-11.

3. Pull out both the upper and the lower handles to eject the server module from the chassis.

4. Slide the server module out of the chassis.

> ![NOTICE icon] **NOTICE:** If you are permanently removing the server module, install a server module blank. Operating the system for extended periods of time without a server module blank installed can cause the system to overheat.

Figure 6-11. Removing and Installing a Server Module
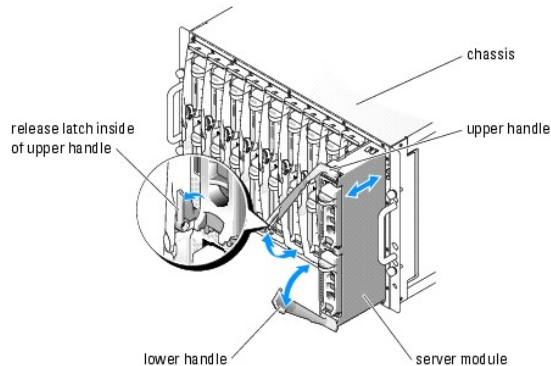
Installing a Server Module

> ![NOTICE icon] **NOTICE:** Follow this procedure carefully—it is possible to insert the server module upside-down, which may damage the chassis midplane and the server module.

1. Orient the server module so that its top side is up. The server module is correctly oriented for installation when its components have the characteristics described below:

   a. The server module's upper handle is above (outside) the lower handle.

       The upper handle has the Dell™ logo on it, extends farther out than the lower handle, and has a release latch on its inside. See Figure 6-12.

   b. The top side of the server module has "TOP-SIDE" engraved in it. See Figure 6-12.

Figure 6-12. Proper Server Module Installation Orientation
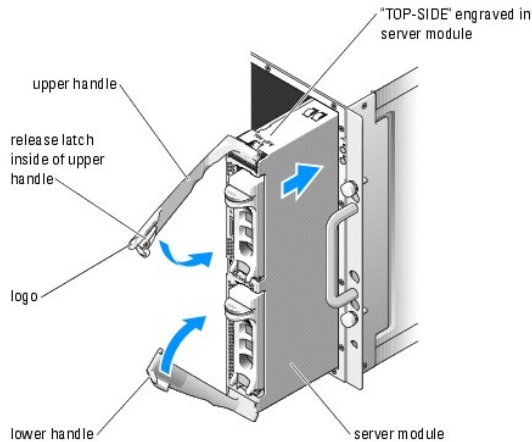
2. Slide the server module into the chassis until the open handles touch the front panel of the chassis.

3. Rotate both handles inward until the lower handle is flush against the server module's front panel.

   The lower handle automatically closes before the upper handle.

4. Continue to rotate the upper handle inward until it is flush against the lower handle.

   The upper-handle release latch locks both handles to the front panel of the server module when the handles are properly closed.

5. Turn on the server module by pressing the module's power button.

Opening the Server Module

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Remove the server module. See "Removing a Server Module."

2. Orient the server module as shown in Figure 6-13 so that the two cover-release buttons are facing up.

3. Press down on both cover-release buttons and slide the cover toward the back of the server module until it stops.

4. Carefully lift the cover away from the server module.

   Figure 6-14 illustrates the major components of the inside of the server module.

Figure 6-13. Opening a Server Module
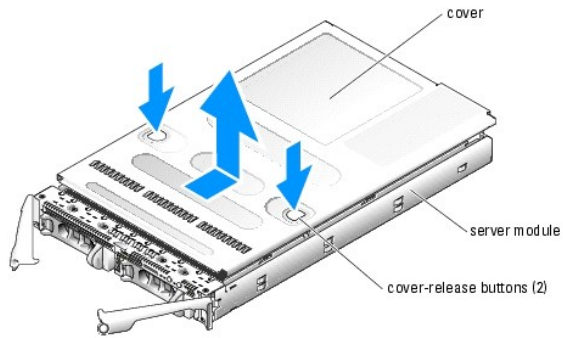
Figure 6-14. Inside a Server Module
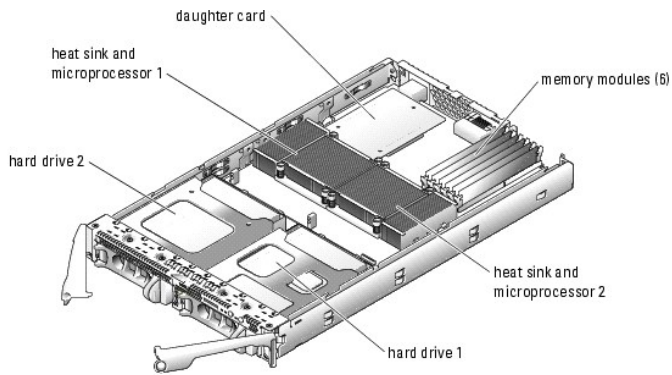
Closing the Server Module

⚠️ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Ensure that no tools or parts are left inside the system.

2. Align the cover with the cover alignment hooks on the sides of the chassis, and slide the cover forward. See Figure 6-15.

3. Install the server module. See "Installing a Server Module."

Figure 6-15. Closing a Server Module

Removing and Installing Server Module Components

The following procedures describe how to remove and install the following components:

- Memory modules
- Daughter cards
- Microprocessors
- Server module battery
- Hard drives

Memory

The six memory module sockets can accommodate from 512 MB to 16 GB of registered ECC PC2-3200 (DDR 2 400) memory. The memory sockets are located near the back of the server module board. See Figure A-3 in "Server Module Board Connectors."

You can upgrade the system memory by installing combinations of 256-MB, 512-MB, 1-GB, 2-GB, or 4-GB registered low-profile memory modules. You can purchase memory upgrade kits from Dell.

○ **NOTICE:** If you remove your original memory modules from the system during a memory upgrade, keep them separate from any new memory modules that you may have, even if you purchased the new memory modules from Dell. Use only registered ECC DDR II memory modules.

✍ **NOTE:** A single-memory module configuration is not supported, and the maximum memory configuration depends on the availability of single-rank 2-GB memory modules.

✍ **NOTE:** The memory modules must be PC2-3200 compliant.

The memory module sockets are arranged in three banks on two channels (A and B). The memory module banks are identified as follows:

- Bank 1: DIMM1_A and DIMM1_B
- Bank 2: DIMM2_A and DIMM2_B
- Bank 3: DIMM3_A and DIMM3_B

See Figure A-3 for the locations of the memory sockets and banks on the server module board.

General Memory Module Installation Guidelines

- A single-memory module configuration is not supported.
- If two or more memory modules are installed, they must be installed in pairs of matched memory size, speed, and technology.
- Install memory modules in order of decreasing capacity, beginning with bank 1, then bank 2, and then bank 3.
- The system supports both single-ranked and dual-ranked memory modules.

  Memory modules marked with a 1R are single ranked and modules marked with a 2R are dual ranked.

- If you install both single-ranked and dual-ranked memory modules, the dual-ranked memory modules must be installed in bank 1, regardless of capacity.

  ✍ **NOTE:** Dual-rank memory modules with less capacity take precedence over single-ranked memory modules with greater capacity.

- Dual-ranked memory modules are not supported in bank 3.

Table 6-1 and Table 6-2 show examples of different memory configurations. Table 6-2 lists the various allowable combinations of single- and dual-ranked memory modules.

Table 6-1. Sample Memory Configurations

Total Memory	DIMM1_A	DIMM1_B	DIMM2_A	DIMM2_B	DIMM3_A	DIMM3_B
512 MB	256 MB	256 MB	none	none	none	none
1 GB	256 MB	256 MB	256 MB	256 MB	none	none
1 GB	512 MB	512 MB	none	none	none	none
2 GB	512 MB	512 MB	512 MB	512 MB	none	none
2 GB	1 GB	1 GB	none	none	none	none
3 GB	1 GB	1 GB	512 MB	512 MB	none	none
3 GB	512 MB	512 MB	512 MB	512 MB	512 MB	512 MB
4 GB	1 GB	1 GB	1 GB	1 GB	none	none
4 GB	1 GB	1 GB	512 MB	512 MB	512 MB	512 MB
6 GB	2 GB	2 GB	1 GB	1 GB	none	none
6 GB	1 GB	1 GB	1 GB	1 GB	1 GB	1 GB
8 GB	2 GB	2 GB	2 GB	2 GB	none	none

8 GB	2 GB	2 GB	1 GB	1 GB	1 GB	1 GB
8 GB	4 GB	4 GB	none	none	none	none
12 GB	2 GB	2 GB	2 GB	2 GB	2 GB	2 GB
16 GB	4 GB	4 GB	4 GB	4 GB	none	none

Table 6-2. Allowable Memory Module Configurations – Single-Ranked and Dual-Ranked Memory Modules

DIMM1_A	DIMM1_B	DIMM2_A	DIMM2_B	DIMM3_A	DIMM3_B
Single Rank	Single Rank	none	none	none	none
Dual Rank	Dual Rank	none	none	none	none
Single Rank	Single Rank	Single Rank	Single Rank	none	none
Dual Rank	Dual Rank	Dual Rank	Dual Rank	none	none
Dual Rank	Dual Rank	Single Rank	Single Rank	none	none
Single Rank	Single Rank	Single Rank	Single Rank	Single Rank	Single Rank
Dual Rank	Dual Rank	Single Rank	Single Rank	Single Rank	Single Rank

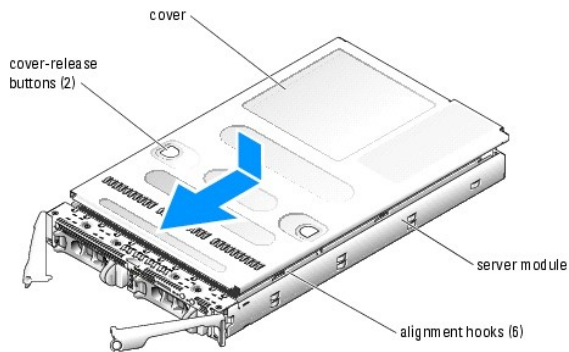## Installing Memory Modules

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Remove the server module. See "Removing a Server Module."

2. Open the server module. See "Opening the Server Module."

3. Locate the memory module sockets. See Figure A-3 in "Server Module Board Connectors."

4. Press the ejectors on the memory module socket down and out, as shown in Figure 6-16, to allow the memory module to be inserted into the socket.

Figure 6-16. Installing and Removing a Memory Module
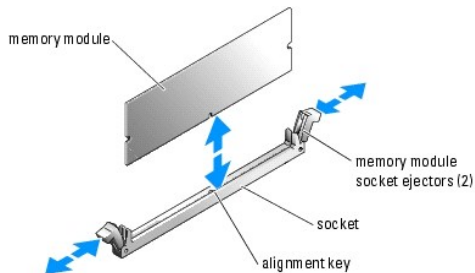
5. Align the memory module's edge connector with the alignment key on the memory module socket, and insert the memory module in the socket.

   ✎ **NOTE:** The memory module socket has an alignment key that allows you to install the memory module in the socket in only one way.

6. Press down on the memory module with your thumbs while pulling up on the ejectors with your index fingers to lock the memory module into the socket.

   When the memory module is properly seated in the socket, the ejectors on the memory module socket align with the ejectors on the other sockets that have memory modules installed.

7. Repeat step 3 through step 6 of this procedure to install the remaining memory modules. See Table 6-1 and Table 6-2 for sample memory configurations.

8. Close the server module. See "Closing the Server Module."

9. Install the server module. See "Installing a Server Module."

10. (Optional) Press <F2> to enter the System Setup program, and check the **System Memory** setting on the main **System Setup** screen.

    The system should have already changed the value to reflect the newly installed memory.

11. If the value is incorrect, one or more of the memory modules may not be installed properly. Repeat step 1 through step 10 of this procedure, checking to ensure that the memory modules are firmly seated in their sockets.

12. Run the system memory test in the system diagnostics. See "Running System Diagnostics."

Removing Memory Modules

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Remove the server module. See "Removing a Server Module."

2. Open the server module. See "Opening the Server Module."

3. Locate the memory module sockets. See Figure A-3.

4. Press down and out on the ejectors on each end of the socket until the memory module pops out of the socket. See Figure 6-16.

5. Close the server module. See "Closing the Server Module."

6. Install the server module. See "Installing a Server Module."

Daughter Card

The server module board daughter-card connectors support a variety of dual-channel I/O module daughter cards. Each type of daughter card must be used in conjunction with its appropriate back-panel I/O module and connector number. For example, server module number 5 must have a Fibre Channel daughter card installed to communicate with the Fibre Channel pass-through module connector number 5 (primary and secondary bays).

Installing a Daughter Card

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Remove the server module. See "Removing a Server Module."

2. Open the server module. See "Opening the Server Module."

⬤ **NOTICE:** Hold the daughter card by its edges only.

3. Align the three screw holes on the daughter card with the three standoffs on the server module board. See Figure 6-17.

4. Align the connectors on the bottom of the daughter card with the connectors on the server module board, and then press down on the card edges until it is fully seated.

5. Secure the daughter card to the server module board with the three screws.

6. Close the server module. See "Closing the Server Module."

7. Install the server module. See "Installing a Server Module."

Figure 6-17. Installing and Removing a Daughter Card

daughter card   screw holes (3)

daughter card connectors
on server module board (2)

Removing a Daughter Card

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Remove the server module. See "Removing a Server Module."

2. Open the server module. See "Opening the Server Module."

3. Remove the three screws that secure the daughter card to the server module board. See Figure 6-17.

🚫 **NOTICE:** Hold the daughter card by its edges only.

4. Lift up the daughter card from its connector and remove it from the server module board.

5. Close the server module. See "Closing the Server Module."

6. Install the server module. See "Installing a Server Module."

Microprocessors

It is possible to upgrade your processor(s) to take advantage of future options in speed and functionality. Each processor and its associated internal cache memory are contained in a pin grid array (PGA) package that is installed in a ZIF socket on the system board.

The following items are included in the processor upgrade kit:

- l   Processor
- l   Heat sink
- l   Thermal grease

Removing the Processor

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Remove the server module. See "Removing a Server Module."

2. Open the server module. See "Opening the Server Module."

⚠ **CAUTION: The processor and heat sink can become extremely hot. Be sure the processor has had sufficient time to cool before handling.**

⊘ **NOTICE:** Never remove the heat sink from a processor unless you intend to remove the processor. The heat sink is necessary to maintain proper thermal conditions.

3. Loosen the four screws that secure the heat sink to the server module board. See Figure 6-18.

Figure 6-18. Installing and Removing the Heat Sink
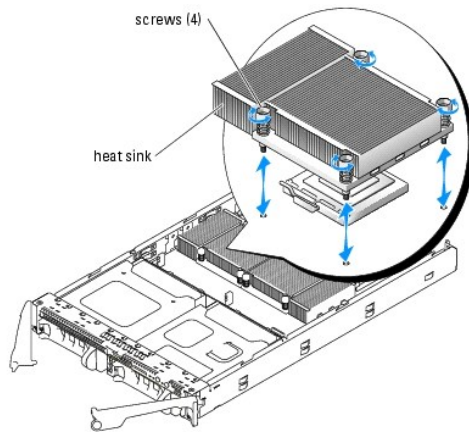
📝 **NOTE:** When removing the heat sink, the possibility exists that the processor might adhere to the heat sink and be removed from the socket. It is recommended that you remove the heat sink while the processor is still warm.

4. Remove the heat sink:

   a. Slightly rotate the heat sink to loosen it from the processor.

   b. If the processor is removed from the socket with the heat sink, twist or slide the processor off of the heat sink. Do not pry the processor off of the heat sink.

   c. Set the heat sink on its top so as not to contaminate the thermal grease.

5. Pull the socket-release lever straight up until the processor is released from the socket. See Figure 6-19.

Figure 6-19. Installing and Removing the Processor
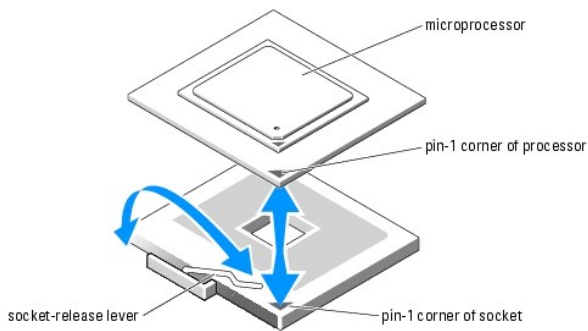
6. Lift the processor out of the socket and leave the release lever up so that the socket is ready for the new processor.

⊘ **NOTICE:** Be careful not to bend any of the pins when removing the processor. Bending the pins can permanently damage the processor.
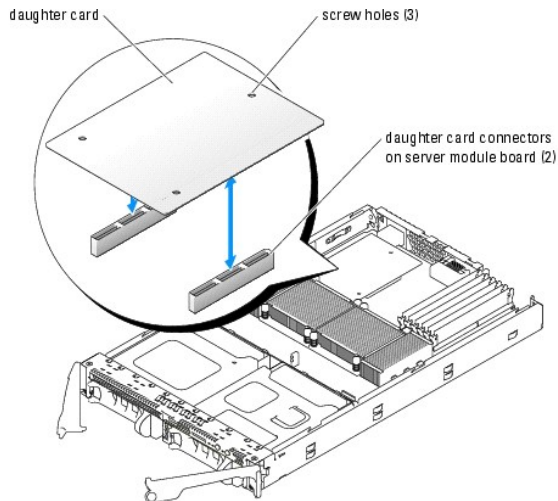
Installing the Processor

⚠ **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

1. Unpack the new processor.

If any of the pins on the processor appear bent, see "Getting Help."

2. Align the pin-1 corner of the processor with the pin-1 corner of the ZIF socket. See Figure 6-19.

   ![NOTE icon] **NOTE:** Identifying the pin-1 corners is critical to positioning the processor correctly.

   Identify the pin-1 corner of the processor by locating the tiny gold triangle on one corner of the processor. Place this corner in the same corner of the ZIF socket identified by a corresponding triangle.

3. Install the processor in the socket.

   ![NOTE icon] **NOTE:** If you are installing just one processor, it must be installed in socket PROC_1. See Figure A-3.

   ![NOTICE icon] **NOTICE:** Positioning the processor incorrectly can permanently damage the processor and the system when you turn it on. When placing the processor in the socket, be sure that all of the pins on the processor enter the corresponding holes. Be careful not to bend the pins.

   a. If the release lever on the processor socket is not positioned all the way up, move it to that position.

   b. With the pin-1 corners of the processor and socket aligned, set the processor lightly in the socket, making sure all pins are matched with the correct holes in the socket.

      Because the system uses a ZIF processor socket, do not use force, which could bend the pins if the processor is misaligned.

      When the processor is positioned correctly, it drops down into the socket with minimal pressure.

   c. When the processor is fully seated in the socket, rotate the socket release lever back down until it snaps into place, securing the processor.

4. Install the heat sink:

   a. Using a clean lint-free cloth, remove the existing thermal grease from the heat sink and the processor.

   ![NOTE icon] **NOTE:** Use the heat sink that you removed in step 4.

   b. Apply thermal grease evenly to the top of the processor.

   c. Place the heat sink onto the processor. See Figure 6-18.

   d. Tighten the four screws to secure the heat sink to the server module board. See Figure 6-18.

5. Close the server module. See "Closing the Server Module."

6. Install the server module. See "Installing a Server Module."

   As the system boots, it detects the presence of the new processor and automatically changes the system configuration information in the System Setup program.

7. Press <F2> to enter the System Setup program, and check that the processor information matches the new system configuration.

   See your *User's Guide* for instructions about using the System Setup program.

8. Run the system diagnostics to verify that the new processor operates correctly.

   See "Running System Diagnostics" for information about running the diagnostics and troubleshooting processor problems.

Server Module Battery

The system battery is a 3.0-volt (V), coin-cell battery.

Removing and Installing the Server Module Battery

![CAUTION icon] **CAUTION: Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized by Dell is not covered by your warranty. Read and follow the safety instructions that came with the product.**

![CAUTION icon] **CAUTION: There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions. See your *Product Information Guide* for additional information.**

1. Remove the appropriate server module. See "Removing a Server Module."

2. Open the server module. See "Opening the Server Module."

3. Remove the system battery by lifting it straight up from its connector. See Figure 6-20.

   See Figure A-3 to locate the system battery on the server module board.

4. Install the new system battery with the side labeled "+" facing toward the inside of the server module. See Figure 6-20.

Figure 6-20. Replacing the System Battery
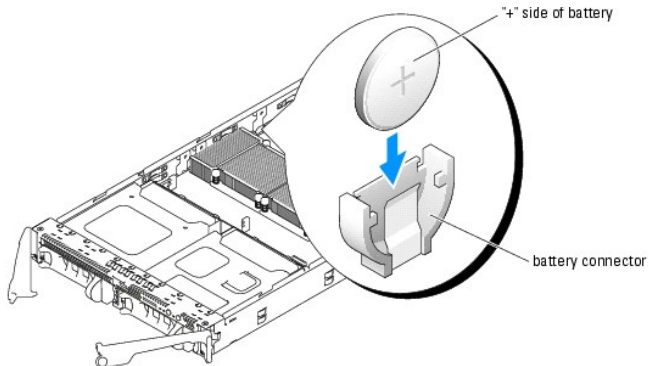
"+" side of battery

battery connector

5. Close the server module. See "Closing the Server Module."

6. Install the server module. See "Installing a Server Module."

7. Enter the System Setup program to confirm that the battery is operating properly. See "Using the System Setup Program" in your *User's Guide*.

8. Enter the correct time and date in the System Setup program's **Time** and **Date** fields.

9. Exit the System Setup program.

10. To test the newly installed battery, remove the server module for at least an hour. See "Removing a Server Module."

11. After an hour, install the server module. See "Installing a Server Module."

12. Enter the System Setup program and if the time and date are still incorrect, see "Getting Help" for instructions about obtaining technical assistance.

Hard Drives

Your server module includes up to two hot-pluggable hard drives. The hard drive bays are located on the front panel of the server module. Each hard drive has indicators that provide hard drive activity and status information.

Integrated Mirroring of SCSI Hard Drives

The SCSI controller on the server module board supports integrated mirroring if two SCSI drives are installed. After installing the drives, see your *Configuration Guide* to enable and configure your RAID array.

Installing a Previously Arrayed Hard Drive Into a SCSI-Mode Server Module

A hard drive previously installed in a RAID configuration contains partial segments of information referred to as "meta-data." If you hot-install a hard drive that contains meta-data into a SCSI-mode server module, its array may appear as degraded after the server module is rebooted.

⚠ **CAUTION: Do not attempt to rebuild the degraded array in a SCSI-mode server module. The server module can accommodate up to two hard drives, one of which is the primary physical boot hard drive. Rebuilding the array could result in loss of data from the primary hard drive.**

To remove the meta-data from the replacement hard drive, perform the following steps:

1. Back up all data onto the replacement hard drive.

2. Restart the server module and press <Ctrl><m>.

3. Change the degraded array properties from mirror to SCSI mode by selecting **NO** as the **Mirror** option.

Installing a Hard Drive

⊘ **NOTICE:** When a replacement hot-pluggable hard drive is installed and the server module is powered on, the hard drive automatically begins to rebuild. Make absolutely sure that the replacement hard drive is blank or contains data that you wish to have over-written. Any data on the replacement hard drive is immediately lost after the hard drive is installed.

⊘ **NOTICE:** When installing a hard drive, ensure that the adjacent drive is fully installed. Inserting a hard-drive carrier and attempting to lock its handle next to a partially installed carrier can damage the partially installed carrier's shield spring and make it unusable.

⊘ **NOTICE:** Not all operating systems support hot-plug drive installation. See the documentation supplied with your operating system.

1. Open the hard-drive carrier handle. See Figure 6-21.

Figure 6-21. Installing a SCSI Hard Drive
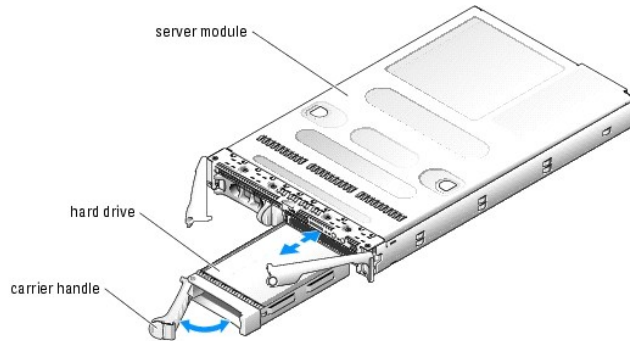
⊘ **NOTICE:** Do not insert a hard-drive carrier and attempt to lock its handle next to a partially installed carrier. Doing so can damage the partially installed carrier's shield spring and make it unusable. Ensure that the adjacent drive carrier is fully installed.

2. Insert the hard-drive carrier into the drive bay.

3. Close the hard-drive carrier handle to lock it in place.

4. If the hard drive is new, run the SCSI controllers test in system diagnostics.

Removing a SCSI Hard Drive

⊘ **NOTICE:** Not all operating systems support hot-plug drive installation. See the documentation supplied with your operating system.

1. Take the hard drive offline and wait until the SCSI hard-drive indicator codes on the drive carrier signal that the drive may be removed safely. See Figure 2-4.

   When all indicators are off, the drive is ready for removal.

   See your operating system documentation for more information on taking the hard drive offline.

2. Open the hard-drive carrier handle to release the drive. See Figure 6-21.

3. Slide the hard drive out until it is free of the drive bay.

   If you are permanently removing the hard drive, install a blank insert.

Shutdown Procedure for Servicing a Hard Drive

✍ **NOTE:** This section applies only to situations where the server module must be powered down to service a hard drive. In many situations, the hard drive can be serviced while the server module powered on.

If you need to power off the server module to service a hard drive, wait 30 seconds after the server module's power indicator turns off before removing the hard drive. Otherwise, the hard drive may not be recognized by the PERC 4/IM after the hard drive is reinstalled and the server module is powered on again.

Configuring the Boot Drive

The drive or device from which the system boots is determined by the boot order specified in the System Setup program (see "Using the System Setup Program" in your *User's Guide*).

Getting Help
Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

- Technical Assistance
- Dell Enterprise Training and Certification
- Problems With Your Order
- Product Information
- Returning Items for Warranty Repair or Credit
- Before You Call
- Contacting Dell

Technical Assistance

If you need assistance with a technical problem, perform the following steps:

1. Complete the procedures in "Troubleshooting Your System."

2. Run the system diagnostics and record any information provided.

3. Make a copy of the Diagnostics Checklist, and fill it out.

4. Use Dell's extensive suite of online services available at Dell Support at **support.dell.com** for help with installation and troubleshooting procedures.

   For more information, see "Online Services."

5. If the preceding steps have not resolved the problem, call Dell for technical assistance.

NOTE: Call technical support from a phone near or at the system so that technical support can assist you with any necessary procedures.

NOTE: Dell's Express Service Code system may not be available in all countries.

When prompted by Dell's automated telephone system, enter your Express Service Code to route the call directly to the proper support personnel. If you do not have an Express Service Code, open the **Dell Accessories** folder, double-click the **Express Service Code** icon, and follow the directions.

For instructions on using the technical support service, see "Technical Support Service" and "Before You Call."

NOTE: Some of the following services are not always available in all locations outside the continental U.S. Call your local Dell representative for information on availability.

Online Services

You can access Dell Support at **support.dell.com**. Select your region on the **WELCOME TO DELL SUPPORT** page, and fill in the requested details to access help tools and information.

You can contact Dell electronically using the following addresses:

- World Wide Web

  www.dell.com/

  www.dell.com/ap/ (Asian/Pacific countries only)

  www.dell.com/jp (Japan only)

  www.euro.dell.com (Europe only)

  www.dell.com/la (Latin American countries)

  www.dell.ca (Canada only)

- Anonymous file transfer protocol (FTP)

  ftp.dell.com/

  Log in as user:anonymous, and use your e-mail address as your password.

- Electronic Support Service

  support@us.dell.com

  apsupport@dell.com (Asian/Pacific countries only)

support.jp.dell.com (Japan only)

support.euro.dell.com (Europe only)

l   Electronic Quote Service

sales@dell.com

apmarketing@dell.com (Asian/Pacific countries only)

sales_canada@dell.com (Canada only)

l   Electronic Information Service

info@dell.com

AutoTech Service

Dell's automated technical support service—AutoTech—provides recorded answers to the questions most frequently asked by Dell customers about their portable and desktop computer systems.

When you call AutoTech, use your touch-tone telephone to select the subjects that correspond to your questions.

The AutoTech service is available 24 hours a day, 7 days a week. You can also access this service through the technical support service. See the contact information for your region.

Automated Order-Status Service

To check on the status of any Dell™ products that you have ordered, you can go to **support.dell.com**, or you can call the automated order-status service. A recording prompts you for the information needed to locate and report on your order. See the contact information for your region.

Technical Support Service

Dell's technical support service is available 24 hours a day, 7 days a week, to answer your questions about Dell hardware. Our technical support staff use computer-based diagnostics to provide fast, accurate answers.

To contact Dell's technical support service, see "Before You Call" and then see the contact information for your region.

Dell Enterprise Training and Certification

Dell Enterprise Training and Certification is available; see **www.dell.com/training** for more information. This service may not be offered in all locations.

Problems With Your Order

If you have a problem with your order, such as missing parts, wrong parts, or incorrect billing, contact Dell for customer assistance. Have your invoice or packing slip available when you call. See the contact information for your region.

Product Information

If you need information about additional products available from Dell, or if you would like to place an order, visit the Dell website at **www.dell.com**. For the telephone number to call to speak to a sales specialist, see the contact information for your region.

Returning Items for Warranty Repair or Credit

Prepare all items being returned, whether for repair or credit, as follows:

1. Call Dell to obtain a Return Material Authorization Number, and write it clearly and prominently on the outside of the box.

    For the telephone number to call, see the contact information for your region.

2. Include a copy of the invoice and a letter describing the reason for the return.

3. Include a copy of any diagnostic information (including the Diagnostics Checklist) indicating the tests you have run and any error messages reported by

the system diagnostics.

4. Include any accessories that belong with the item(s) being returned (such as power cables, media such as CDs and diskettes, and guides) if the return is for credit.

5. Pack the equipment to be returned in the original (or equivalent) packing materials.

   You are responsible for paying shipping expenses. You are also responsible for insuring any product returned, and you assume the risk of loss during shipment to Dell. Collect-on-delivery (C.O.D.) packages are not accepted.

Returns that are missing any of the preceding requirements will be refused at our receiving dock and returned to you.

Before You Call

NOTE: Have your Express Service Code ready when you call. The code helps Dell's automated-support telephone system direct your call more efficiently.

Remember to fill out the Diagnostics Checklist. If possible, turn on your system before you call Dell for technical assistance and call from a telephone at or near the computer. You may be asked to type some commands at the keyboard, relay detailed information during operations, or try other troubleshooting steps possible only at the computer system itself. Ensure that the system documentation is available.

⚠ **CAUTION: Before servicing any components inside your computer, see your *System Information Guide* for important safety information.**

Diagnostics Checklist
Name:
Date:
Address:
Phone number:
Service Tag (bar code on the back of the computer):
Express Service Code:
Return Material Authorization Number (if provided by Dell support technician):
Operating system and version:
Peripherals:
Expansion cards:
Are you connected to a network? Yes No
Network, version, and network card:
Programs and versions:
See your operating system documentation to determine the contents of the system's start-up files. If possible, print each file. Otherwise, record the contents of each file before calling Dell.
Error message, beep code, or diagnostic code:
Description of problem and troubleshooting procedures you performed:

Contacting Dell

To contact Dell electronically, you can access the following websites:

- **www.dell.com**

- **support.dell.com** (technical support)

- **premiersupport.dell.com** (technical support for educational, government, healthcare, and medium/large business customers, including Premier, Platinum, and Gold customers)

For specific web addresses for your country, find the appropriate country section in the table below.

📝 **NOTE:** Toll-free numbers are for use within the country for which they are listed.

NOTE: In certain countries, technical support specific to Dell XPS portable computers is available at a separate telephone number listed for participating countries. If you do not see a telephone number listed that is specific for XPS portable computers, you may contact Dell through the technical support number listed and your call will be routed appropriately.

When you need to contact Dell, use the electronic addresses, telephone numbers, and codes provided in the following table. If you need assistance in determining which codes to use, contact a local or an international operator.

Country (City) International Access Code Country Code City Code	Department Name or Service Area, Website and E-Mail Address	Area Codes, Local Numbers, and Toll-Free Numbers
Anguilla	General Support	toll-**free:** 800-335-0031
Antigua and Barbuda	General Support	1-800-805-5924
Argentina (Buenos Aires) International Access Code: **00** Country Code: **54** City Code: **11**	Website: **www.dell.com.ar**	
	E-mail: us_latin_services@dell.com	
	E-mail for desktop and portable computers: la-techsupport@dell.com	
	E-mail for servers and EMC® storage products: la_enterprise@dell.com	
	Customer Care	toll-**free:** 0-800-444-0730
	Tech Support	toll-**free:** 0-800-444-0733
	Tech Support Services	toll-**free:** 0-800-444-0724
	Sales	0-810-444-3355
Aruba	General Support	toll-**free:** 800-1578
Australia (Sydney) International Access Code: **0011** Country Code: **61** City Code: **2**	E-mail (Australia): au_tech_support@dell.com	
	E-mail Customer Care (Australia and New Zealand): apcustserv@dell.com	
	Home and Small Business	1-300-655-533
	Government and Business	toll-**free:** 1-800-633-559
	Preferred Accounts Division (PAD)	toll-**free:** 1-800-060-889
	Customer Care (after sales)	toll-**free** 1-333-55(option 3)
	Technical Support (portables and desktops)	toll-**free:** 1-300-655-533
	Technical Support (servers and workstations)	toll-**free:** 1-800-733-314
	Corporate Sales	toll-**free:** 1-800-808-385
	Transaction Sales	toll-**free:** 1-800-808-312
	Fax	toll-**free:** 1-800-818-341
Austria (Vienna) International Access Code: **900** Country Code: **43** City Code: **1**	Website: **support.euro.dell.com**	
	E-mail: tech_support_central_europe@dell.com	
	Home/Small Business Sales	0820 240 530 00
	Home/Small Business Fax	0820 240 530 49
	Home/Small Business Customer Care	0820 240 530 14
	Preferred Accounts/Corporate Customer Care	0820 240 530 16
	Technical Support for XPS portable computers only	0820 240 530 81
	Home/Small Business Technical Support for all other Dell computers	0820 240 530 14
	Preferred Accounts/Corporate Technical Support	0660 8779
	Switchboard	0820 240 530 00
Bahamas	General Support	toll-**free:** 1-866-278-6818
Barbados	General Support	1-800-534-3066
Belgium (Brussels) International Access Code: **00** Country Code: **32** City Code: **2**	Website: **support.euro.dell.com**	
	E-mail for French-speaking Customers: **support.euro.dell.com/be/fr/emaildell/**	
	Technical Support for XPS portable computers only	02 481 92 96
	Technical Support for all other Dell computers	02 481 92 88
	Technical Support Fax	02 481 92 95
	Customer Care	02 713 15 65
	Corporate Sales	02 481 91 00
	Fax	02 481 92 99
	Switchboard	02 481 91 00
Bermuda	General Support	1-800-342-0671
Bolivia	General Support	toll-**free:** 800-10-0238
Brazil International Access Code: **00** Country Code: **55** City Code: **51**	Website: **www.dell.com/br**	
	Customer Support, Technical Support	0800 90 3355
	Technical Support Fax	51 481 5470
	Customer Care Fax	51 481 5480
	Sales	0800 90 3390
British Virgin Islands	General Support	toll-**free:** 1-866-278-6820
Brunei	Customer Technical Support (Penang, Malaysia)	604 633 4966
	Customer Care (Penang, Malaysia)	604 633 4888

Country Code: **673**	Transaction Sales (Penang, Malaysia)	604 633 4955
Canada (North York, Ontario) International Access Code: **011**	Online Order Status: **www.dell.ca/ostatus**	
	AutoTech (automated technical support)	toll-**free: 1-800-247-9362**
	Customer Care (Home Sales/Small Business)	toll-**free: 1-800-847-4096**
	Customer Care (med./large business, government)	toll-**free: 1-800-326-9463**
	Technical Support (Home Sales/Small Business)	toll-**free: 1-800-847-4096**
	Technical Support (med./large bus., government)	toll-**free: 1-800-387-5757**
	Technical Support (printers, projectors, televisions, handhelds, digital jukebox, and wireless)	1-877-335-5767
	Sales (Home Sales/Small Business)	toll-**free: 1-800-387-5752**
	Sales (med./large bus., government)	toll-**free: 1-800-387-5755**
	Spare Parts Sales & Extended Service Sales	1 866 440 3355
Cayman Islands	General Support	1-800-805-7541
Chile (Santiago) Country Code: **56** City Code: **2**	Sales, Customer Support, and Technical Support	toll-**free: 1230-020-4823**
China (Xiamen) Country Code: **86** City Code: **592**	Technical Support website: **support.dell.com.cn**	
	Technical Support E-mail: cn_support@dell.com	
	Customer Care E-mail: customer_cn@dell.com	
	Technical Support Fax	592 818 1350
	Technical Support (Dell™ Dimension™ and Inspiron)	toll-**free: 800 858 2969**
	Technical Support (OptiPlex™, Latitude™, and Dell Precision™)	toll-**free: 800 858 0950**
	Technical Support (servers and storage)	toll-**free: 800 858 0960**
	Technical Support (projectors, PDAs, switches, routers, and so on)	toll-**free: 800 858 2920**
	Technical Support (printers)	toll-**free: 800 858 2311**
	Customer Care	toll-**free: 800 858 2060**
	Customer Care Fax	592 818 1308
	Home and Small Business	toll-**free: 800 858 2222**
	Preferred Accounts Division	toll-**free: 800 858 2557**
	Large Corporate Accounts GCP	toll-**free: 800 858 2055**
	Large Corporate Accounts Key Accounts	toll-**free: 800 858 2628**
	Large Corporate Accounts North	toll-**free: 800 858 2999**
	Large Corporate Accounts North Government and Education	toll-**free: 800 858 2955**
	Large Corporate Accounts East	toll-**free: 800 858 2020**
	Large Corporate Accounts East Government and Education	toll-**free: 800 858 2669**
	Large Corporate Accounts Queue Team	toll-**free: 800 858 2572**
	Large Corporate Accounts South	toll-**free: 800 858 2355**
	Large Corporate Accounts West	toll-**free: 800 858 2811**
	Large Corporate Accounts Spare Parts	toll-**free: 800 858 2621**
Colombia	General Support	980-9-15-3978
Costa Rica	General Support	0800-012-0435
Czech Republic (Prague) International Access Code: **00** Country Code: **420**	Website: **support.euro.dell.com**	
	E-mail: czech_dell@dell.com	
	Technical Support	22537 2727
	Customer Care	22537 2707
	Fax	22537 2714
	Tech Fax	22537 2728
	Switchboard	22537 2711
Denmark (Copenhagen) International Access Code: **00** Country Code: **45**	Website: **support.euro.dell.com**	
	E-mail: **support.euro.dell.com/dk/da/emaildell/**	
	Technical Support for XPS portable computers only	7010 0074
	Technical Support for all other Dell computers	7023 0182
	Customer Care (Relational)	7023 0184
	Home/Small Business Customer Care	3287 5505
	Switchboard (Relational)	3287 1200
	Switchboard Fax (Relational)	3287 1201
	Switchboard (Home/Small Business)	3287 5000

	Switchboard Fax (Home/Small Business)	3287 5001
Dominica	General Support	toll-**free:** 1-866-278-6821
Dominican Republic	General Support	1-800-148-0530
Ecuador	General Support	toll-**free:** 999-119
El Salvador	General Support	01-899-753-0777
Finland (Helsinki) International Access Code: **990** Country Code: **358** City Code: **9**	Website: **support.euro.dell.com**	
	E-mail: **support.euro.dell.com/fi/fi/emaildell/**	
	Technical Support	09 253 313 60
	Customer Care	09 253 313 38
	Fax	09 253 313 99
	Switchboard	09 253 313 00
France (Paris) (Montpellier) International Access Code: **00** Country Code: **33** City Codes: **(1) (4)**	Website: **support.euro.dell.com**	
	E-mail: **support.euro.dell.com/fr/fr/emaildell/**	
	Home and Small Business	
	Technical Support for XPS portable computers only	0825 387 129
	Technical Support for all other Dell computers	0825 387 270
	Customer Care	0825 823 833
	Switchboard	0825 004 700
	Switchboard (calls from outside of France)	04 99 75 40 00
	Sales	0825 004 700
	Fax	0825 004 701
	Fax (calls from outside of France)	04 99 75 40 01
	Corporate	
	Technical Support	0825 004 719
	Customer Care	0825 338 339
	Switchboard	01 55 94 71 00
	Sales	01 55 94 71 00
	Fax	01 55 94 71 01
Germany (Langen) International Access Code: **00** Country Code: **49** City Code: **6103**	Website: **support.euro.dell.com**	
	E-mail: tech_support_central_europe@dell.com	
	Technical Support for XPS portable computers only	06103 766-7222
	Technical Support for all other Dell computers	06103 766-7200
	Home/Small Business Customer Care	0180-5-224400
	Global Segment Customer Care	06103 766-9570
	Preferred Accounts Customer Care	06103 766-9420
	Large Accounts Customer Care	06103 766-9560
	Public Accounts Customer Care	06103 766-9555
	Switchboard	06103 766-7000
Greece International Access Code: **00** Country Code: **30**	Website: **support.euro.dell.com**	
	E-mail: **support.euro.dell.com/gr/en/emaildell/**	
	Technical Support	00800-44 14 95 18
	Gold Service Technical Support	00800-44 14 00 83
	Switchboard	2108129810
	Gold Service Switchboard	2108129811
	Sales	2108129800
	Fax	2108129812
Grenada	General Support	toll-**free:** 1-866-540-3355
Guatemala	General Support	1-800-999-0136
Guyana	General Support	toll-**free:** 1-877-270-4609
Hong Kong International Access Code: **001** Country Code: **852**	Website: **support.ap.dell.com**	
	Technical Support E-mail: apsupport@dell.com	
	Technical Support (Dimension and Inspiron)	2969 3188
	Technical Support (OptiPlex, Latitude, and Dell Precision)	2969 3191
	Technical Support (PowerApp™, PowerEdge™, PowerConnect™, and PowerVault™)	2969 3196
	Customer Care	3416 0910
	Large Corporate Accounts	3416 0907
	Global Customer Programs	3416 0908
	Medium Business Division	3416 0912

	Home and Small Business Division	2969 3105
India	E-mail: india_support_desktop@dell.com india_support_notebook@dell.com india_support_Server@dell.com	
	Technical Support	1600338045 and 1600448046
	Sales (Large Corporate Accounts)	1600 33 8044
	Sales (Home and Small Business)	1600 33 8046
Ireland (Cherrywood) International Access Code: **16** Country Code: **353** City Code: **1**	Website: **support.euro.dell.com**	
	E-mail: dell_direct_support@dell.com	
	Technical Support for XPS portable computers only	1850 200 722
	Technical Support for all other Dell computers	1850 543 543
	U.K. Technical Support (dial within U.K. only)	0870 908 0800
	Home User Customer Care	01 204 4014
	Small Business Customer Care	01 204 4014
	U.K. Customer Care (dial within U.K. only)	0870 906 0010
	Corporate Customer Care	1850 200 982
	Corporate Customer Care (dial within U.K. only)	0870 907 4499
	Ireland Sales	01 204 4444
	U.K. Sales (dial within U.K. only)	0870 907 4000
	Fax/Sales Fax	01 204 0103
	Switchboard	01 204 4444
Italy (Milan) International Access Code: **00** Country Code: **39** City Code: **02**	Website: **support.euro.dell.com**	
	E-mail: **support.euro.dell.com/it/it/emaildell/**	
	Home and Small Business	
	Technical Support	02 577 826 90
	Customer Care	02 696 821 14
	Fax	02 696 821 13
	Switchboard	02 696 821 12
	Corporate	
	Technical Support	02 577 826 90
	Customer Care	02 577 825 55
	Fax	02 575 035 30
	Switchboard	02 577 821
Jamaica	General Support (dial from within Jamaica only)	1-800-682-3639
Japan (Kawasaki) International Access Code: **001** Country Code: **81** City Code: **44**	Website: **support.jp.dell.com**	
	Technical Support (servers)	toll-free: 0120-198-498
	Technical Support outside of Japan (servers)	81-44-556-4162
	Technical Support (Dimension and Inspiron)	toll-free: 0120-198-226
	Technical Support outside of Japan (Dimension and Inspiron)	81-44-520-1435
	Technical Support (Dell Precision, OptiPlex, and Latitude)	toll-free:0120-198-433
	Technical Support outside of Japan (Dell Precision, OptiPlex, and Latitude)	81-44-556-3894
	Technical Support (PDAs, projectors, printers, routers)	toll-free: 0120-981-690
	Technical Support outside of Japan (PDAs, projectors, printers, routers)	81-44-556-3468
	Faxbox Service	044-556-3490
	24-Hour Automated Order Service	044-556-3801
	Customer Care	044-556-4240
	Business Sales Division (up to 400 employees)	044-556-1465
	Preferred Accounts Division Sales (over 400 employees)	044-556-3433
	Large Corporate Accounts Sales (over 3500 employees)	044-556-3430
	Public Sales (government agencies, educational institutions, and medical institutions)	044-556-1469
	Global Segment Japan	044-556-3469
	Individual User	044-556-1760
	Switchboard	044-556-4300
Korea (Seoul) International Access Code: **001** Country Code: **82**	E-mail: krsupport@dell.com	
	Technical Support	toll-**free: 080**-200-3800
	Technical Support (Dimension, PDA, Electronics and Accessories)	toll-**free: 080**-200-3801
	Sales	toll-**free: 080**-200-3600
	Fax	2194-6202

City Code: **2**	Switchboard	2194-6000
Latin America	Customer Technical Support (Austin, Texas, U.S.A.)	512 728-4093
	Customer Service (Austin, Texas, U.S.A.)	512 728-3619
	Fax (Technical Support and Customer Service) (Austin, Texas, U.S.A.)	512 728-3883
	Sales (Austin, Texas, U.S.A.)	512 728-4397
	SalesFax (Austin, Texas, U.S.A.)	512 728-4600 or 512 728-3772
Luxembourg International Access Code: **00** Country Code: **352**	Website: **support.euro.dell.com**	
	Technical Support	342 08 08 075
	Home/Small Business Sales	+32 (0)2 713 15 96
	Corporate Sales	26 25 77 81
	Customer Care	+32 (0)2 481 91 19
	Fax	26 25 77 82
Macao Country Code: **853**	Technical Support	toll-**free: 0800 105**
	Customer Service (Xiamen, China)	34 160 910
	Transaction Sales (Xiamen, China)	29 693 115
Malaysia (Penang) International Access Code: **00** Country Code: **60** City Code: **4**	Website: **support.ap.dell.com**	
	Technical Support (Dell Precision, OptiPlex, and Latitude)	toll-**free: 1 800 880 193**
	Technical Support (Dimension, Inspiron, and Electronics and Accessories)	toll-**free: 1 800 881 306**
	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-**free: 1800 881 386**
	Customer Care	toll-**free: 1800 881 306 (option 6)**
	Transaction Sales	toll-**free: 1 800 888 202**
	Corporate Sales	toll-**free: 1 800 888 213**
Mexico International Access Code: **00** Country Code: **52**	Customer Technical Support	001-877-384-8979 or 001-877-269-3383
	Sales	50-81-8800 or 01-800-888-3355
	Customer Service	001-877-384-8979 or 001-877-269-3383
	Main	50-81-8800 or 01-800-888-3355
Montserrat	General Support	toll-**free: 1-866-278-6822**
Netherlands Antilles	General Support	001-800-882-1519
Netherlands (Amsterdam) International Access Code: **00** Country Code: **31** City Code: **20**	Website: **support.euro.dell.com**	
	Technical Support for XPS portable computers only	020 674 45 94
	Technical Support for all other Dell computers	020 674 45 00
	Technical Support Fax	020 674 47 66
	Home/Small Business Customer Care	020 674 42 00
	Relational Customer Care	020 674 4325
	Home/Small Business Sales	020 674 55 00
	Relational Sales	020 674 50 00
	Home/Small Business Sales Fax	020 674 47 75
	Relational Sales Fax	020 674 47 50
	Switchboard	020 674 50 00
	Switchboard Fax	020 674 47 50
New Zealand International Access Code: **00** Country Code: **64**	E-mail (New Zealand): nz_tech_support@dell.com	
	E-mail Customer Care (Australia and New Zealand): apcustserv@dell.com	
	Customer Care	toll-**free: 0800-289-335 (option 3)**
	Technical Support (for desktop and portable computers)	toll-**free: 0800 446 255**
	Technical Support (for servers and workstations)	toll-**free: 0800 443 563**
	Home and Small Business	0800 446 255
	Government and Business	0800 444 617
	Sales	0800 441 567
	Fax	0800 441 566
Nicaragua	General Support	001-800-220-1006
	Website: **support.euro.dell.com**	
	E-mail: **support.euro.dell.com/no/no/emaildell/**	

Norway (Lysaker)	Technical Support for XPS portable computers only	815 35 043
	Technical Support for all other Dell products	671 16882
International Access Code: **00**	Relational Customer Care	671 17575
	Home/Small Business Customer Care	23162298
Country Code: **47**	Switchboard	671 16800
	Fax Switchboard	671 16865
Panama	General Support	001-800-507-0962
Peru	General Support	0800-50-669
Poland (Warsaw)	Website: **support.euro.dell.com**	
	E-mail: pl_support_tech@dell.com	
	Customer Service Phone	57 95 700
International Access Code: **011**	Customer Care	57 95 999
	Sales	57 95 999
Country Code: **48**	Customer Service Fax	57 95 806
	Reception Desk Fax	57 95 998
City Code: **22**	Switchboard	57 95 999
Portugal	Website: **support.euro.dell.com**	
	E-mail: **support.euro.dell.com/pt/en/emaildell/**	
International Access Code: **00**	Technical Support	707200149
Country Code: **351**	Customer Care	800 300 413
	Sales	800 300 410 or 800 300 411 or 800 300 412 or 21 422 07 10
	Fax	21 424 01 12
Puerto Rico	General Support	1-800-805-7545
St. Kitts and Nevis	General Support	toll-**free**: 1-877-441-4731
St. Lucia	General Support	1-800-882-1521
St. Vincent and the Grenadines	General Support	toll-**free**: 1-877-270-4609
Singapore (Singapore)	Website: **support.ap.dell.com**	
	Technical Support (Dimension, Inspiron, and Electronics and Accessories)	toll-**free**: 1800 394 7430
International Access Code: **005**	Technical Support (OptiPlex, Latitude, and Dell Precision)	toll-**free**: 1800 394 7488
	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-**free**: 1800 394 7478
Country Code: **65**	Customer Care	toll-**free**: 1 800 394 7430 (option 6)
	Transaction Sales	toll-**free**: 1 800 394 7412
	Corporate Sales	toll-**free**: 1 800 394 7419
Slovakia (Prague)	Website: **support.euro.dell.com**	
	E-mail: czech_dell@dell.com	
	Technical Support	02 5441 5727
International Access Code: **00**	Customer Care	420 22537 2707
	Fax	02 5441 8328
Country Code: **421**	Tech Fax	02 5441 8328
	Switchboard (Sales)	02 5441 7585
South Africa (Johannesburg)	Website: **support.euro.dell.com**	
	E-mail: dell_za_support@dell.com	
International Access Code:	Gold Queue	011 709 7713
09/091	Technical Support	011 709 7710
	Customer Care	011 709 7707
Country Code: **27**	Sales	011 709 7700
City Code: **11**	Fax	011 706 0495
	Switchboard	011 709 7700
Southeast Asian and Pacific Countries	Customer Technical Support, Customer Service, and Sales (Penang, Malaysia)	604 633 4810
Spain (Madrid)	Website: **support.euro.dell.com**	
	E-mail: **support.euro.dell.com/es/es/emaildell/**	
	Home and Small Business	
	Technical Support	902 100 130
	Customer Care	902 118 540
International Access Code: **00**	Sales	902 118 541
	Switchboard	902 118 541
Country Code: **34**	Fax	902 118 539

City Code: **91**	**Corporate**	
	Technical Support	902 100 130
	Customer Care	902 115 236
	Switchboard	91 722 92 00
	Fax	91 722 95 83
Sweden (Upplands Vasby) International Access Code: **00** Country Code: **46** City Code: **8**	Website: **support.euro.dell.com**	
	E-mail: **support.euro.dell.com/se/sv/emaildell/**	
	Technical Support for XPS portable computers only	0771 340 340
	Technical Support for all other Dell products	08 590 05 199
	Relational Customer Care	08 590 05 642
	Home/Small Business Customer Care	08 587 70 527
	Employee Purchase Program (EPP) Support	20 140 14 44
	Technical Support Fax	08 590 05 594
	Sales	08 590 05 185
Switzerland (Geneva) International Access Code: **00** Country Code: **41** City Code: **22**	Website: **support.euro.dell.com**	
	E-mail: Tech_support_central_Europe@dell.com	
	E-mail for French-speaking HSB and Corporate Customers: **support.euro.dell.com/ch/fr/emaildell/**	
	Technical Support for XPS portable computers only	0848 33 88 57
	Technical Support (Home and Small Business) for all other Dell products	0844 811 411
	Technical Support (Corporate)	0844 822 844
	Customer Care (Home and Small Business)	0848 802 202
	Customer Care (Corporate)	0848 821 721
	Fax	022 799 01 90
	Switchboard	022 799 01 01
Taiwan International Access Code: **002** Country Code: **886**	Website: **support.ap.dell.com**	
	E-mail: ap_support@dell.com	
	Technical Support (OptiPlex, Latitude, Inspiron, Dimension, and Electronics and Accessories)	toll-**free: 00801 86 1011**
	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-**free: 00801 60 1256**
	Customer Care	toll-**free: 00801 60 1250** **(option 5)**
	Transaction Sales	toll-**free: 00801 65 1228**
	Corporate Sales	toll-**free: 00801 651 227**
Thailand International Access Code: **001** Country Code: **66**	Website: **support.ap.dell.com**	
	Technical Support (OptiPlex, Latitude, and Dell Precision)	toll-**free: 1800 0060 07**
	Technical Support (PowerApp, PowerEdge, PowerConnect, and PowerVault)	toll-**free: 1800 0600 09**
	Customer Care	toll-**free: 1800 006 007** **(option 7)**
	Corporate Sales	toll-**free: 1800 006 009**
	Transaction Sales	toll-**free: 1800 006 006**
Trinidad/Tobago	General Support	1-800-805-8035
Turks and Caicos Islands	General Support	toll-**free: 1-866-540-3355**
U.K. (Bracknell) International Access Code: **00** Country Code: **44** City Code: **1344**	Website: **support.euro.dell.com**	
	Customer Care website: **support.euro.dell.com/uk/en/ECare/Form/Home.asp**	
	E-mail: dell_direct_support@dell.com	
	Technical Support (Corporate/Preferred Accounts/PAD [1000+ employees])	0870 908 0500
	Technical Support for XPS portable computers only	0870 366 4180
	Technical Support (direct and general) for all other products	0870 908 0800
	Global Accounts Customer Care	01344 373 186
	Home and Small Business Customer Care	0870 906 0010
	Corporate Customer Care	01344 373 185
	Preferred Accounts (500–5000 employees) Customer Care	0870 906 0010
	Central Government Customer Care	01344 373 193
	Local Government & Education Customer Care	01344 373 199
	Health Customer Care	01344 373 194
	Home and Small Business Sales	0870 907 4000
	Corporate/Public Sector Sales	01344 860 456
	Home and Small Business Fax	0870 907 4006
Uruguay	General Support	toll-**free: 000-413-598-2521**

	Automated Order-Status Service	toll-free: 1-800-433-9014
	AutoTech (portable and desktop computers)	toll-free: 1-800-247-9362
	Technical Support (Dell TV, Printers, and Projectors) for Relationship customers	toll-free 1-877-459-7298
	Consumer (Home and Home Office) Technical Support for all other Dell products	toll-free: 1-800-624-9896
	Customer Service	toll-free: 1-800-624-9897
	DellNet™ Service and Support	toll-free: 1-877-Dellnet (1-877-335-5638)
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Financial Services website: **www.dellfinancialservices.com**	
	Financial Services (lease/loans)	toll-free: 1-877-577-3355
U.S.A. (Austin, Texas)	Financial Services (Dell Preferred Accounts [DPA])	toll-free: 1-800-283-2210
	Business	
International Access Code: **011**	Customer Service and Technical Support	toll-free: 1-800-456-3355
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
Country Code: **1**	Printers and Projectors Technical Support	toll-free: 1-877-459-7298
	Public (government, education, and healthcare)	
	Customer Service and Technical Support	toll-free: 1-800-456-3355
	Employee Purchase Program (EPP) Customers	toll-free: 1-800-695-8133
	Dell Sales	toll-free: 1-800-289-3355 or toll-free: 1-800-879-3355
	Dell Outlet Store (Dell refurbished computers)	toll-free: 1-888-798-7561
	Software and Peripherals Sales	toll-free: 1-800-671-3355
	Spare Parts Sales	toll-free: 1-800-357-3355
	Extended Service and Warranty Sales	toll-free: 1-800-247-4618
	Fax	toll-free: 1-800-727-8320
	Dell Services for the Deaf, Hard-of-Hearing, or Speech-Impaired	toll-free: 1-877-DELLTTY (1-877-335-5889)
U.S. Virgin Islands	General Support	1-877-673-3355
Venezuela	General Support	8001-3605

Dell™ PowerEdge™ 1855 Systems Installation and Troubleshooting Guide

NOTE: A NOTE indicates important information that helps you make better use of your computer.

NOTICE: A NOTICE indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

CAUTION: A CAUTION indicates a potential for property damage, personal injury, or death.

For a complete list of abbreviations and acronyms, see the "Glossary" in the *User's Guide*.