Dell™ PowerEdge™ 1855 Systems User's Guide

Model BMX

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.

Initial release: 20 August 2004
Last revised: 30 June 2005

Back to Contents Page

Technical Specifications

Dell™ PowerEdge™ 1855 Systems User's Guide

Server Module

Processor	
Processor type	Up to two Intel® Xeon™ processors with a minimum clock speed of at least 2.8 GHz
Front-side bus speed	800 MHz
L2 cache	At least 1 MB external cache

Memory	
Architecture	144-bit ECC registered PC2-3200 DDR2 SDRAM DIMMs, with two-way interleaving, rated for 400-MHz operation
Memory module sockets	Six 240-pin
Memory module capacities	256 MB, 512 MB, 1 GB, or 2 GB
Minimum RAM	512 MB (two 256-MB modules)
Maximum RAM	8-GB dual-ranked DIMMs 12-GB single-ranked DIMMs

Drives	
Hard Drives SCSI	Up to two 3.5-inch form factor 1-inch, internal, hot-plug, Ultra320 SCSI

Connectors	
Externally accessible	
Front	
Custom	Supports two USB devices and video via custom cable

Video	
Video type	ATI Radeon 7000-M video controller
Video memory	16 MB

Physical	
Height	28.575 cm (11.25 in)
Width	4.241 cm (1.67 in)
Depth	50.8 cm (20 in)
Weight (maximum configuration)	7.257 kg (16 lb)

Battery	
Server module battery	CR 2032 3.0-V lithium ion coin cell

System

Physical	

Height	31.038 cm (12.22 in)
Width	42.519 cm (16.74 in)
Depth	76.2 cm (30 in)
Weight (maximum configuration)	129.274 kg (285 lb)

2100-Watt Power Supply Module	
AC power supply (per power supply)	
Wattage	2100 W
Voltage	170–264 VAC, 50/60 Hz, 15.8 A at 170 VAC, 9.9 A at 264 VAC
Heat dissipation	3480 BTU/hr. maximum
Maximum inrush current	Under typical line conditions and over the entire system ambient operating range, the inrush current may reach 55 A per power supply for 10 ms or less.
Physical	
Height	9.70 cm (3.82 in)
Width	12.90 cm (5.08 in)
Depth	23.01cm (9.06 in)
Weight (maximum configuration)	3.288 kg (7.25 lb)

1200-Watt Power Supply Module (not available after April 2005)	
AC power supply (per power supply)	
Wattage	1200 W
Voltage	180–264 VAC, 50/60 Hz, 9.0 A at 180 VAC, 6.0 A at 264 VAC
Heat dissipation	3480 BTU/hr. maximum
Maximum inrush current	Under typical line conditions and over the entire system ambient operating range, the inrush current may reach 40 A per power supply for 10 ms or less.
Physical	
Height	9.70 cm (3.82in)
Width	12.90 cm (5.08 in)
Depth	24.31 cm (9.57 in)
Weight (maximum configuration)	3.04 kg (6.7 lb)

Fan Module	
Physical	
Height	14.732 cm (5.8 in)
Width	15.748 cm (6.2 in)
Depth	27.305 cm (10.75 in)
Weight (maximum configuration)	2.948 kg (6.5 lb)

KVM Module	
Externally accessible connector	
Custom	Custom cable used for two PS/2 and one video
ACI port	RJ-45 (Avocent Analog KVM switch only)
Ethernet	RJ-45 (Avocent Digital Access KVM switch only)
Physical	
Height	2.54 cm (1 in)
Width	5.334 cm (2.1 in)
Depth	28.194 cm (11.1 in)
Weight (maximum configuration)	0.272 kg (.6 lb)

DRAC/MC Module	
Externally accessible connectors	

Remote management	Dedicated 10/100 RJ-45 (for integrated Ethernet remote access controller)
Serial	9-pin, DTE, 16550-compatible
Battery	
Module battery	CR 2032 3.0-V lithium ion coin cell
Physical	
Height	2.54 cm (1 in)
Width	7.493 cm (2.95 in)
Depth	26.03 cm (10.35 in)
Weight (maximum configuration)	0.363 kg (.8 lb)

PowerConnect 5316M Ethernet Switch Module	
Externally accessible connectors	
Gb 10/100/1000 Mbps Ethernet	Six autonegotiating RJ-45 uplinks
Physical	
Height	3.302 cm (1.3 in)
Width	13.081 cm (5.15 in)
Depth	27.432 cm (10.8 in)
Weight (maximum configuration)	0.816 kg (1.8 lb)

Gb Ethernet Pass-Through Module	
Externally accessible connectors	
Ethernet	Ten RJ-45 uplinks (for integrated 1-Gbps NICs)
	NOTE: Pass-through uplinks support 1000 Mbps connection only.
Physical	
Height	3.302 cm (1.3 in)
Width	13.081 cm (5.15 in)
Depth	27.432 cm (10.8 in)
Weight (maximum configuration)	0.816 kg (1.8 in)

Fibre Channel Pass-Through Module	
Externally accessible connectors	
Fibre Channel transceiver	Ten 76-pin, 3.5 Gbps, GPI0 transceiver receptacles
Physical	
Height	3.302 cm (1.3 in)
Width	13.081 cm (5.15 in)
Depth	27.432 cm (10.8 in)
Weight (maximum configuration)	0.816 kg (1.8 lb)

Fibre Channel Switch Module	
Externally accessible connectors	
Fibre Channel	Four universal (E, F, and FL) autosensing ports
10/100 Mbps Ethernet	RJ-45
Physical	
Height	3.302 cm (1.3 in)
Width	13.081 cm (5.15 in)
Depth	27.432 cm (10.8 in)
Weight (maximum configuration)	1.06 kg (2.35 lb)

Infiniband Pass-Through Module	
Externally accessible connectors	

Infiniband	Ten 4X ports
Physical	
Height	3.302 cm (1.3 in)
Width	13.081 cm (5.15 in)
Depth	27.432 cm (10.8 in)
Weight (maximum configuration)	1.8 kg (4 lb)

Environmental	
NOTE: For additional information about environmental measurements for specific system configurations, see **www.dell.com/environmental_datasheets**. The system is not for use in an office environment.	
Temperature	
Operating	10° to 35°C (50° to 95°F) **NOTE:** Decrease the maximum temperature by 1°C (1.8°F) per 300 m (985 ft) above 900 m (2955 ft).
Storage	–40° to 65°C (–40° to 149°F)
Relative humidity	
Operating	8% to 85% (noncondensing) with a maximum humidity gradation of 10% per hour
Storage	5% to 95% (noncondensing)
Maximum vibration	
Operating	0.25 G at 3–200 Hz for 15 min
Storage	0.5 G at 3–200 Hz for 15 min
Maximum shock	
Operating	One shock pulse in the positive z axis (one pulse on each side of the system) of 41 G for up to 2 ms
Storage	Six consecutively executed shock pulses in the positive and negative x, y, and z axes (one pulse on each side of the system) of 71 G for up to 2 ms
Altitude	
Operating	–16 to 3048 m (–50 to 10,000 ft)
Storage	–16 to 10,600 m (–50 to 35,000 ft)

Back to Contents Page

Back to Contents Page

System Overview

Dell™ PowerEdge™ 1855 Systems User's Guide

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 1-1). 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 1-1. 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 1-2). 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 1-1 shows the status features.

Figure 1-2. Front-Panel Control and Indicators

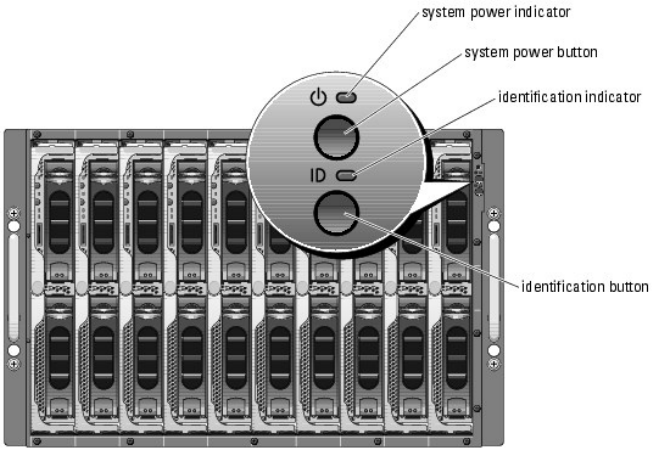


Table 1-1. System Status Features

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. See your *Installation and Troubleshooting Guide* for more information.

Server Module Features

Each server module has one power button and one KVM module selection button on the front (see Figure 1-3). 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 1-3. Server Module Indicators

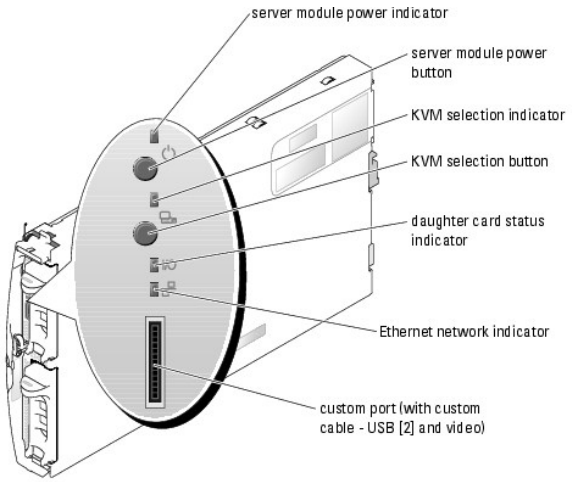


Table 1-2 provides information about the status indicators.

Table 1-2. Server Module Status Features

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 your *Installation and Troubleshooting Guide*.
		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 slow	The module power is on and the server 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.
		Amber blinking slow	The module power is off and the server is being remotely identified via the DRAC/MC.
Server module power button	N/A	None	Turns server module power off and on. • 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. • If the module is not running an ACPI-compliant operating system, power is turned off immediately after the power button is pressed. • 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 your *Installation and Troubleshooting Guide* for additional information.
		Green/amber blinking	The server module is selected for the KVM and a power fault exists. See your *Installation and Troubleshooting Guide* for additional information.
KVM selection button	N/A	None	Selects the server module for use with the KVM located on the back of the system.
Daughter card status indicator (Infiniband daughter 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 data transfers are in progress.
Daughter card status indicator (Fibre channel daughter card installed)	I/O	Off	Fibre channel daughter card is not installed.
		Green	Fibre channel daughter card is installed and a link exists.
		Green blinking	Fibre channel daughter card data transfers are in progress.
Daughter card status indicator (Gb Ethernet daughter card installed)	I/O	Off	Gb Ethernet daughter card is not installed.
		Green	Gb Ethernet daughter card is installed and a link exists.

		Green blinking	Gb Ethernet daughter card data transfers are in progress.
Network indicators		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"). 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 1-4 and Table 1-3 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 1-4. Hard-Drive Features and Indicators

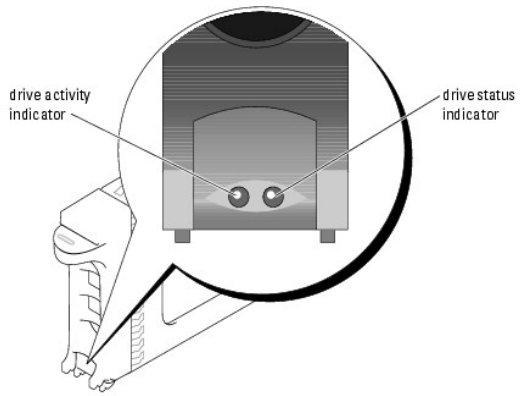


Table 1-3. Hard-Drive Status Indicator Patterns

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 your *Installation and Troubleshooting Guide* for more information.
	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 1-5 shows a sample configuration and the numbering for the bays. Table 1-4 provides information about the back-panel features.

Figure 1-5. Back-Panel Features

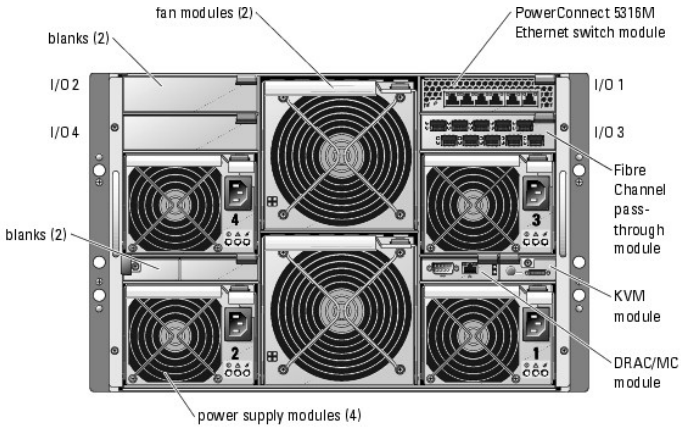


Table 1-4. Back-Panel Features

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 Features").
PowerConnect™ 5316M Ethernet switch module	Provides information about the 10/100/100 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 1-6). Table 1-5 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 1-6. Power Supply Indicators

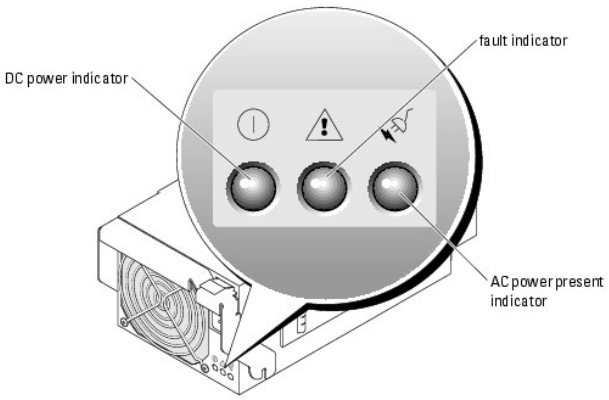


Table 1-5. Power Supply Indicator Codes

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 your *Installation and Troubleshooting Guide* for more information.
AC power present indicator		Green	AC power is present at the power supply and the system is connected to an AC power source. **NOTE:** The system requires 200+V AC power.

Fan Module Indicators

Each hot-pluggable fan module contains two redundant fans (see Figure 1-7). Table 1-6 lists the fan indicator codes.

Figure 1-7. Fan Module Indicators

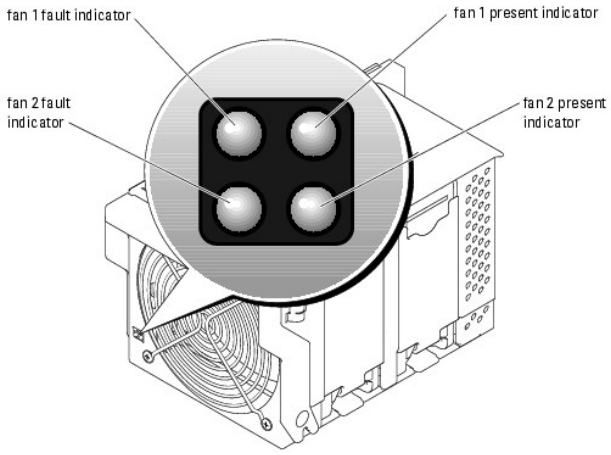


Table 1-6. Fan Module Indicator Codes

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 your *Installation and Troubleshooting Guide* for detailed information.
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 your *Installation and Troubleshooting Guide* for detailed information.

KVM Modules

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

- Avocent Analog KVM Ethernet switch module (standard)
- Avocent Digital Access KVM switch module (optional)
- 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.

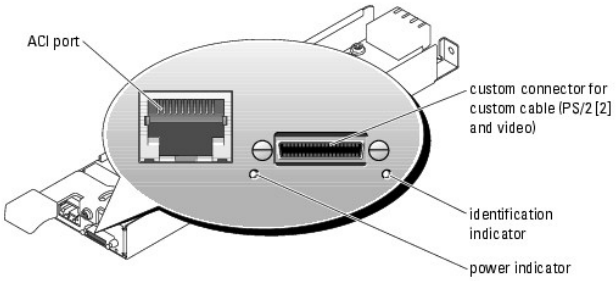
The switch module also provides an Analog Console Interface (ACI) port, which allows you to connect a server module via Cat5 cabling to an external device such as the Dell 2161DS Digital console switch or Dell 180AS/2160AS analog console switches, without the need for a Server Interface Pod (SIP.)

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 1-8 shows the external features on the Avocent Analog KVM switch module.

Figure 1-8. Avocent Analog KVM Switch Module



The Avocent Analog KVM switch module also includes an identification indicator (see Figure 1-8). Table 1-7 describes the indicators and features on the switch module.

Table 1-7. 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		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:

- 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 tiering into external analog KVM switches. This switch uses the same OSCAR interface as the standard 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 in its place.

- 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.

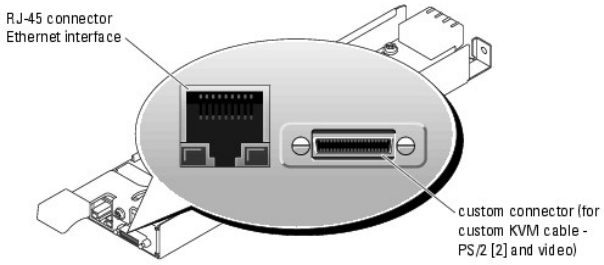
  NOTE: The switch's Ethernet port must be connected into the same network as the DRAC/MC port and must be configured in the same IP subnet as the DRAC/MC controller.

  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 1-9 shows the external features on the Avocent Digital Access KVM switch module.

Figure 1-9. 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 1-10). Table 1-8 lists the indicators and features on the KVM switch module.

Figure 1-10. KVM Switch Module Features

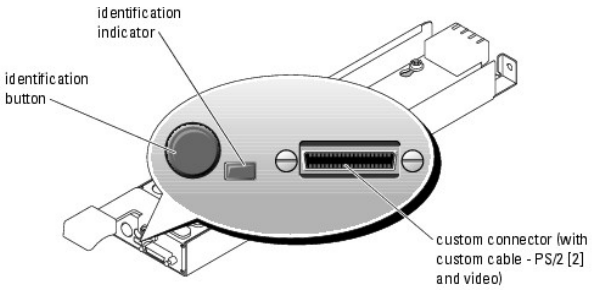


Table 1-8. KVM Switch Module Indicators and Features

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 Features

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 1-11). See the documentation for the DRAC/MC module for specific information on serial port redirection of server modules and switches. Table 1-9 provides information about the status indicators.

Figure 1-11. DRAC/MC Module Features

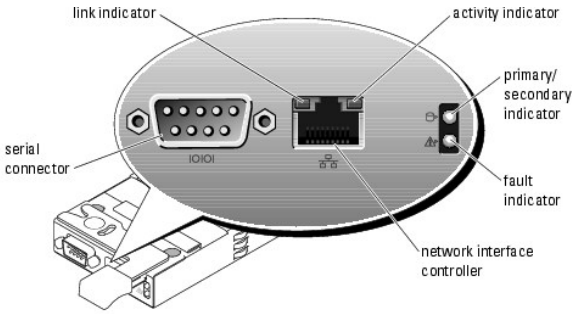


Table 1-9. DRAC/MC Module Indicators

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 your *Installation and Troubleshooting Guide* for detailed information.
		Amber blinking	In a dual (redundant) configuration (when available), this DRAC/MC failed. See your *Installation and Troubleshooting Guide* for detailed information.
Serial connector		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:

- Upgrade DRAC/MC firmware
- Issue a software reset command for a DRAC/MC, such as racadm racreset
- Reseat a DRAC/MC module
- 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 at least version 1.1. If the DRAC/MC module currently in the system is version 1.0, you must upgrade the firmware of that module to at least 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.

The following guidelines must be used when populating I/O modules.

- 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.

- 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.

- 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 1-10 lists the valid I/O module configurations. See Figure 1-5 for I/O bay locations.

Table 1-10. 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 1-12). 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 1-5). I/O bays 3 and 4 require that you install a Gb Ethernet daughtercard in the server module. If redundancy is not required, you must install the switch module in I/O 1 bay. The switch module has an internal serial port that communicates with the DRAC/MC module. Table 1-11 lists the indicators on each switch module. For additional information about the PowerConnect 5316M Ethernet switch module, see the documentation provided with the module.

Figure 1-12. PowerConnect 5316M Ethernet Switch Module Indicators and Features

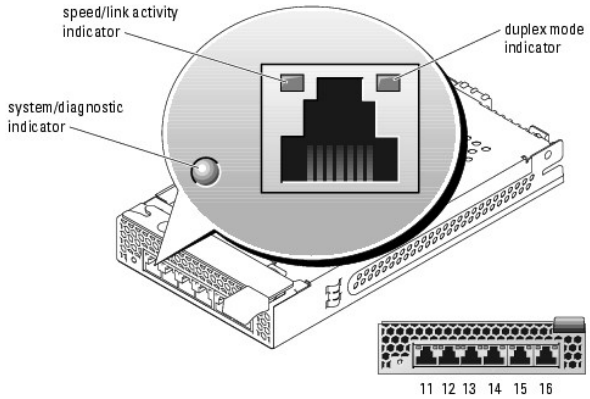


Table 1-11. PowerConnect 5316M Ethernet Switch Module Indicators

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 mis match.
	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 1-13). 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 1-12 lists the functionality of the Fibre Channel pass-through module indicators. For additional information on installing or troubleshooting this module, see your *Installation and Troubleshooting Guide*.

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 supplied with this module.

Figure 1-13. Fibre Channel Pass-Through Module Indicators and Features

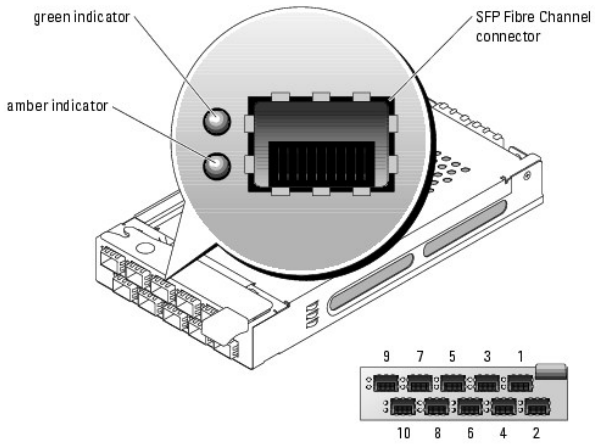


Table 1-12. Fibre Channel Pass-Through Module Indicators

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.

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

Infiniband Pass-through Module

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

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

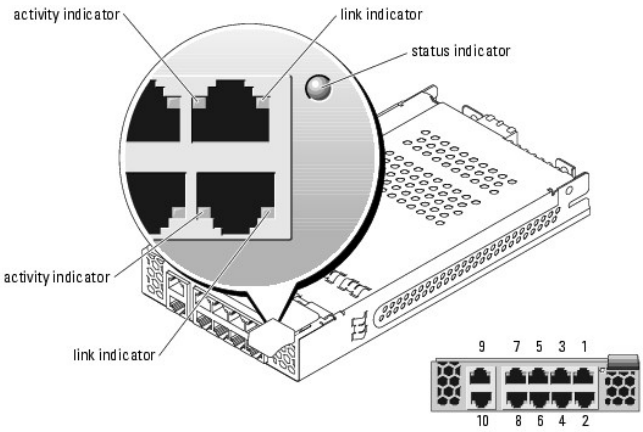
NOTE: If you require service, technical support, or parts replacement for your Topspin Infiniband product, contact Topspin Support Services directly at 1-800-499-1473 or through **www.topspin.com**.

Gb Ethernet Pass-through Module

The Gb Ethernet pass-through module has 10 RJ-45 ports. When installed in I/O 1 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 1-14). 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 1-13 lists the functionality of the Gb Ethernet pass-through module indicators. For additional information on installing this module, see your *Installation and Troubleshooting Guide*.

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 1-14. Gb Pass-through Module Indicators and Features



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 1-13. 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	Off	Module is operating normally.
	Green blinking	Module is identified as a being powered down by the DRAC/MC controller due to an I/O module mis match.

System Features

- Support for up to ten server modules. The chassis can support from one to ten server modules. If fewer than ten server modules are installed in the chassis, a blank module is used. Blank modules are required for proper cooling.
- DRAC/MC, which provides access to systems management software features.
  - To access systems management features, connect the null modem cable provided with the system between the serial management port and an external PC. You may also obtain system management information through a Web browser connected to the RJ-45 management port. Systems management software monitors the system and server module status.
  - Embedded systems management circuitry that monitors operation of the system fans, and critical system voltages and temperatures. The systems management circuitry works in conjunction with your systems management software.
- Support for I/O connectivity including pass-through modules and network switch modules. Optional daughter cards installed in the server modules enable the I/O connectivity.
- Two hot-pluggable system fan modules. Each fan module has two replaceable fans.
- Four 2100-watt, hot-pluggable, redundant power supplies. Two power supplies provide power to the system; two additional power supplies provide redundancy.
- Four 1200-watt, hot-pluggable, redundant power supplies (not available after April 2005). Three power supplies provide power to the system; an additional power supply provides redundancy.

NOTE: Remove only one power supply at a time. The power supply modules assist in cooling the system. If a power supply fails, keep the power supply module in the chassis because the fans in it continue to cool the chassis. For more information on installing power supply modules, see your *Installation and Troubleshooting Guide*.

Server Module Features

- One or two Intel® Xeon™ microprocessors with an internal operating speed of at least 2.8 GHz, a 1-MB cache, and a front-side (external) bus speed of 800 MHz.

- Support for symmetric multiprocessing (SMP), which is available on systems with two Intel Xeon processors. SMP greatly improves overall system performance by dividing processor operations between independent processors. To take advantage of this feature, you must use an operating system that supports multiprocessing.
- A minimum of 512 MB of system memory, upgradable to 8 GB by installing 2-GB dual-ranked, 144-bit, ECC registered, PC2-3200 DDR2 SDRAM memory modules in the four memory module sockets on the server module board; or upgradable to 12 GB by installing six single-ranked, 2-GB memory modules. The server module supports two-way memory interleaving, rated for 400-MHz operation.

  NOTE: Two-way interleaving is not supported in the single memory module configuration.

  Additional memory capacities will be supported as they become available.
- Support for up to two 1-inch, hot-pluggable, Ultra320 SCSI hard drives.
- Integrated internal drive mirroring allows two SCSI disks to be mirrored through the integrated RAID controller.
- An external port to support USB devices using the custom cable. USB devices include a mouse, a keyboard, flash drive, a 1.44-MB, 3.5-inch diskette drive, or a CD drive.

  NOTE: Only Dell-supplied USB CD-ROM and diskette drives are supported; use only a USB 2.0 compliant cable with a length not to exceed 3 meters (118.1 inches).
- An integrated VGA-compatible video subsystem with an ATI Radeon 7000 M video controller. This video subsystem contains 16 MB of SDRAM video memory (nonupgradable). Maximum resolution is 1280 x 1024 x 65,000 colors (noninterlaced).

For more information about specific features, see "Technical Specifications"and "Other Documents You May Need."

Software Features

- A System Setup program for quickly viewing and changing system configuration information. For more information about this program, see "Using the System Setup Program."
- Enhanced security features, including a system password and a setup password, available through the System Setup program.
- System diagnostics for evaluating system components and devices. For information about using diagnostics, see "Running System Diagnostics" in your *Installation and Troubleshooting Guide*.
- Video drivers for displaying many application programs in high-resolution modes.
- Systems management software and documentation. Systems management software is used to manage and monitor each individual server module as well as the system as a whole, including all of the server modules, network switch modules, power supplies, and fans. Systems management software manages the system locally and remotely on a network. Dell recommends that you use the systems management software provided with this system.
- Optional solutions software for Web hosting, caching, or load balancing. See your solutions software documentation for more information.

Supported Operating Systems

- Microsoft® Windows® 2000 Server and Advanced Server with Service Pack 4
- Microsoft Windows Server™ 2003 Standard Edition, Enterprise Edition, and Web Edition with Service Pack 1
- Microsoft Windows Server 2003, Standard and Enterprise x64 Edition
- Red Hat® Linux Enterprise Server AS, ES, and WS (version 4)
- Red Hat Linux Enterprise Server for Intel Extended Memory 64 Technology (Intel EM64T) AS, ES, and WS (version 4)
- SuSE Linux Enterprise Server 9 for Intel EM65T

Power Protection Devices

Certain devices protect your system from the effects of problems such as power surges and power failures.

- PDU — Uses circuit breakers to ensure that the AC current load does not exceed the PDU's rating.
- Surge protector — Prevents voltage spikes, such as those that may occur during an electrical storm, from entering the system through the electrical outlet. They do not protect against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.
- Line conditioner — Maintains a system's AC power source voltage at a moderately constant level and provides protection from brownouts, but does not protect against a complete power loss.
- UPS — Uses battery power to keep the system running when AC power is unavailable. The battery is charged by AC power while it is available so that after AC power is lost, the battery can provide power to the system for a limited amount of time—from 5 minutes to approximately an hour. A UPS that provides only 5 minutes of battery power allows you to save your files and to shut down the system. Use surge protectors and PDUs with all universal power supplies, and ensure that the UPS is UL-safety approved.

Other Documents You May Need

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

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

- The *Rack Installation Guide* or *Rack Installation Instructions* included with your rack solution describes how to install your system into a rack.
- The *Getting Started Guide* provides an overview of initially setting up your system.
- The *Installation and Troubleshooting Guide* describes how to troubleshoot the system and install or replace system components.
- The *Dell PowerEdge Expandable RAID Controller 4/im Integrated Mirroring Guide* describes using the integrated mirroring features.
- The *Dell OpenManage Baseboard Management Controller User's Guide* provides detailed information on using the BMC.
- The *Dell Remote Access Controller/Modular Chassis User's Guide* provides detailed information on using the remote management features of the system.
- 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.
- The network switch module documentation describes the features and how to use the network switch modules.
- Systems management software documentation describes the features, requirements, installation, and basic operation of the software.
- Operating system documentation describes how to install (if necessary), configure, and use the operating system software.
- Documentation for any components you purchased separately provides information to configure and install these options.
- 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.

- 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 you do not understand a procedure in this guide or if the system does not perform as expected, see your *Installation and Troubleshooting Guide*.

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

Back to Contents Page

Back to Contents Page

Using the System Setup Program

Dell™ PowerEdge™ 1855 Systems User's Guide

After you set up your system, run the System Setup program to familiarize yourself with your system configuration and optional settings. Record the information for future reference.

You can use the System Setup program to:

- Change the system configuration stored in NVRAM after you add, change, or remove hardware
- Set or change user-selectable options—for example, the time or date
- Enable or disable integrated devices
- Correct discrepancies between the installed hardware and configuration settings

NOTE: When a server module is inserted into a chassis, the server module functions as a system. Each server module has a System Setup program to allow configuration of the server module and features such as password protection.

Entering the System Setup Program

1. Turn on or restart your system.
2. Press <F2> immediately after you see the following message:

   <F2> = Setup

   If your operating system begins to load before you press <F2>, allow the system to finish booting, and then restart your system and try again.

   NOTE: To ensure an orderly system shutdown, see the documentation that accompanied your operating system.

Responding to Error Messages

You can enter the System Setup program by responding to certain error messages. If an error message appears while the system is booting, make a note of the message. Before entering the System Setup program, see "System Beep Codes" and "System Messages" in your *Installation and Troubleshooting Guide* for an explanation of the message and suggestions for correcting errors.

NOTE: After installing a memory upgrade, it is normal for your system to send a message the first time you start your system.

Using the System Setup Program

Table 2-1 lists the keys that you use to view or change information on the System Setup program screens and to exit the program.

Table 2-1. System Setup Program Navigation Keys

Keys	Action
Up arrow or <Shift><Tab>	Moves to the previous field.
Down arrow or <Tab>	Moves to the next field.
Spacebar, <+>, <–>, left and right arrows	Cycles through the settings in a field. In some fields, you can also type the appropriate value.
<Esc>	Exits the System Setup program and restarts the system if any changes were made.
<F1>	Displays the System Setup program's help file.

NOTE: For most of the options, any changes that you make are recorded but do not take effect until you restart the system.

System Setup Options

Main Screen

When you enter the System Setup program, the main System Setup program screen appears (see Figure 2-1).

Figure 2-1. Main System Setup Program Screen

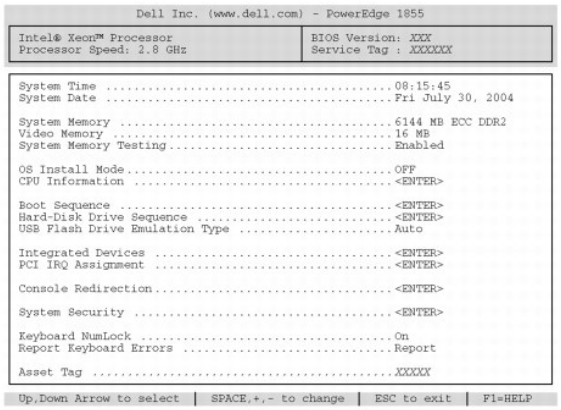


Table 2-2 lists the options and descriptions for the information fields that appear on the main System Setup program screen.

NOTE: The options for the System Setup program change based on the system configuration.

NOTE: The System Setup program defaults are listed under their respective options, where applicable.

Table 2-2. System Setup Program Options

Option	Description
System Time	Resets the time on the system's internal clock.
System Date	Resets the date on the system's internal calendar.
System Memory	Displays the amount of system memory. This option does not have user-selectable settings.
Video Memory	Displays the amount of video memory. This option does not have user-selectable settings.
System Memory Testing (**Enabled** default)	Determines if memory is being tested during POST.
OS Install Mode (**Off** default)	Determines the maximum amount of memory available to the operating system. **On** sets the maximum memory to 256 MB. **Off** makes all of the system memory available to the operating system. Some operating systems cannot install with more than 2 GB of system memory. Enable this option (**On**) during operating system installation and disable (**Off**) after installation.
CPU Information	See "CPU Information Screen."
Boot Sequence	Determines the order in which the system searches for boot devices during system startup. Available options can include the USB diskette drive, USB CD drive, hard drives, and USB flash drive. **NOTE:** A USB device will be displayed in the boot order screen only if it is attached to the system before the system enters BIOS
Hard-Disk Drive Sequence	Determines the order in which the system searches the hard drives during system startup. The selections depend on the hard drives installed in your system.
USB Flash Drive Emulation Type (**Auto** default)	Determines the emulation type for a USB flash drive. **Hard disk** allows the USB flash drive to act as a hard drive. **Floppy** allows the USB flash drive to act as a removable diskette drive. **Auto** automatically chooses an emulation type.
Integrated Devices	See "Integrated Devices Screen."
PCI IRQ Assignment	Displays a screen to change the IRQ assigned to each of the integrated devices on the PCI bus, and any installed expansion cards that require an IRQ.
Console Redirection	See "Console Redirection Screen."
System Security	Displays a screen to configure the system password and setup password features. See "Using the System Password" and "Using the Setup Password" for more information.
Keyboard NumLock (**On** default)	Determines whether your system starts up with the NumLock mode activated on 101- or 102-key keyboards (does not apply to 84-key keyboards).
Report Keyboard Errors (**Report** default)	Enables or disables reporting of keyboard errors during the POST. Select **Report** for host systems that have keyboards attached. Select **Do Not Report** to suppress all error messages relating to the keyboard or keyboard controller during POST. This setting does not affect the operation of the keyboard itself if a keyboard is attached to the system.
Asset Tag	Displays the customer-programmable asset tag number for the system if an asset tag number has been assigned. To enter an asset tag number of up to 10 characters into NVRAM, see "Acquiring the asset.com Utility."

CPU Information Screen

Table 2-3 lists the options and descriptions for the information fields that appear on the **CPU Information** screen.

Table 2-3. CPU Information Screen

Option	Description
Bus Speed	Displays the bus speed of the processors.
Logical Processor (**Enabled** default)	Displays when the processors support HyperThreading. **Enabled** permits all logical processors to be used by the operating system. Only the first logical processor of each processor installed in the system is used by the operating system if **Disabled** is selected.
Sequential Memory Access (**Enabled** default**)**	Displays when the processor supports sequential memory access. **Enabled** optimizes the system for applications that require sequential memory access. **Disabled** is used for applications with random memory access.
Demand Based Power Management (**Disabled** default)	Enables the operating system to regulate processor power usage based on load.
Processor *X* ID	Displays the family and model number of each processor.
Core Speed	Displays the clock speed of the processor(s).
Level *X* Cache	Displays the amount of cache memory for the processor.

Integrated Devices Screen

Table 2-4 lists the options and descriptions for the information fields that appear on the **Integrated Devices** screen.

Table 2-4. Integrated Devices Screen Options

Option	Description
Primary SCSI Controller (**On** default)	Enables the integrated SCSI subsystem. This field displays only when RAID is not detected in the system. **Off** disables the SCSI subsystem.
USB Controller (**On with BIOS support** default)	Enables or disables the system's USB ports. Options are **On with BIOS support**, **On without BIOS support**, or **Off**. Disabling the USB ports makes system resources available for other devices.
Embedded Gb NIC1 and NIC2 (**On** default)	Enables or disables the system's integrated NICs. Changes take effect after the system reboots. **NOTE: Off** will disable both NIC1 and NIC2.
NIC1 PXE (**On** default)	Enables or disables NIC1 PXE. PXE support allows the system to boot from the network. Changes take effect after the system reboots.
MAC Address	Displays the MAC address for the integrated 10/100/1000 NIC. This field does not have user-selectable settings.
NIC2 PXE (**Off** default)	Enables or disables NIC2 PXE. PXE support allows the system to boot from the network. Changes take effect after the system reboots.
MAC Address	Displays the MAC address for the integrated 10/100/1000 NIC. This field does not have user-selectable settings.
Speaker (**On** default)	Sets the integrated speaker **On** or **Off**. A change to this option takes effect immediately (rebooting the system is not required).

Console Redirection Screen

Table 2-5 lists the options and descriptions for the information fields that appear on the **Console Redirection** screen.

Table 2-5. Console Redirection Screen Options

Option	Description
Console Redirection (**Off** default)	**Console Redirection** options are **BMC SOL**, **DRAC/MC**, and **Off**. **BMC SOL** enables the BMC serial over LAN connection. **DRAC/MC** enables console redirection through the management module's serial connector. **Off** disables console redirection.
Failsafe Baud Rate (**57600** default)	Displays the failsafe baud rate used for console redirection when the baud rate cannot be negotiated automatically with the remote terminal. This rate should not be adjusted.
Remote Terminal Type (**VT 100/VT 220** default)	Select either **VT 100/VT 220** or **ANSI**.
Redirection After Boot (**Enabled** default)	Enables or disables BIOS console redirection after your system boots to the operating system.

System Security Screen

Table 2-6 lists the options and descriptions for the information fields that appear on the **System Security** screen.

Table 2-6. System Security Screen Options

Option	Description
System Password	Displays the current status of your system's password security feature and allows you to assign and verify a new password. **NOTE:** See "Using the System Password" for instructions on assigning a password and using or changing an existing server module password.
Setup Password	Restricts access to the System Setup program in the same way that you restrict access to your system using the **System Password** feature. **NOTE:** See "Using the Setup Password" for instructions on assigning a setup password and using or changing an existing setup password.
Password Status	Setting the **Setup Password** option to **Enabled** prevents the system password from being changed or disabled at start-up. To *lock* the system password, assign a setup password in the **Setup Password** option and then change the **Password Status** option to **Locked**. In this state, you cannot change the system password using the **System Password** option and the system password cannot be disabled at start-up by pressing <Ctrl><Enter>. To *unlock* the system password, enter the setup password in the **Setup Password** field and then change the **Password Status** option to **Unlocked**. In this state, you can disable the system password at start-up by pressing <Ctrl><Enter> and then change the password using the **System Password** option.
Power Button (**Enabled** default)	Enables or disables the server module's power button. - If you turn off the server module using the power button and you are using an ACPI-compliant operating system, the server module can perform an orderly shutdown before power is turned off. - If the server module is not running an ACPI-compliant operating system, power is turned off immediately after the power button is pressed. The button is enabled in the System Setup program. When disabled, the button can only turn on server module power.
AC Power Recovery (**Last** default)	Determines how the server module reacts when power is restored. If the option is set to **Last**, the server module returns to the last power state. **On** turns on the server module after power is restored. When set to **Off**, the server module remains off after power is restored.

Exit Screen

After you press <Esc> to exit the System Setup program, the **Exit** screen displays the following options:

- Save Changes and Exit
- Discard Changes and Exit
- Return to Setup

System and Setup Password Features

NOTICE: The password features provide a basic level of security for the data on your system. If your data requires more security, use additional forms of protection, such as data encryption programs.

NOTICE: Anyone can access the data stored on your system if you leave the system running and unattended without having a system password assigned or if you leave your system unlocked so that someone can disable the password by changing a jumper setting.

Your system is shipped to you without the system password feature enabled. If system security is a concern, operate your system only with system password protection.

To change or delete an existing password, you must know the password (see "Deleting or Changing an Existing System Password"). If you forget your password, you cannot operate your system or change settings in the System Setup program until a trained service technician changes the password jumper setting to disable the passwords, and erases the existing passwords. This procedure is described in the *Installation and Troubleshooting Guide*.

Using the System Password

After a system password is assigned, only those who know the password have full use of the system. When the **System Password** option is set to **Enabled**, the system prompts you for the system password after the system starts.

Assigning a System Password

Before you assign a system password, enter the System Setup program and check the **System Password** option.

When a system password is assigned, the setting shown for the **System Password** option is **Enabled**. If the setting shown for the **Password Status** is **Unlocked**, you can change the system password. If the **Password Status** option is **Locked**, you cannot change the system password. When the system password feature is disabled by a jumper setting, the system password is **Disabled**, and you cannot change or enter a new system password.

When a system password is not assigned and the password jumper on the system board is in the enabled (default) position, the setting shown for the **System Password** option is **Not Enabled** and the **Password Status** field is **Unlocked**. To assign a system password:

1. Verify that the **Password Status** option is set to **Unlocked**.
2. Highlight the **System Password** option and press <Enter>.
3. Type your new system password.

   You can use up to 32 characters in your password.

   As you press each character key (or the spacebar for a blank space), a placeholder appears in the field.

   The password assignment is not case-sensitive. However, certain key combinations are not valid. If you enter one of these combinations, the system beeps. To erase a character when entering your password, press <Backspace> or the left-arrow key.

   NOTE: To escape from the field without assigning a system password, press <Enter> to move to another field, or press <Esc> at any time prior to completing step 5.

4. Press <Enter>.
5. To confirm your password, type it a second time and press <Enter>.

   The setting shown for the **System Password** changes to **Enabled**. Exit the System Setup program and begin using your system.

6. Either reboot your system now for your password protection to take effect or continue working.

   NOTE: Password protection does not take effect until you reboot the system.

Using Your System Password to Secure Your System

NOTE: If you have assigned a setup password (see "Using the Setup Password"), the system accepts your setup password as an alternate system password.

When the **Password Status** option is set to **Unlocked**, you have the option to leave the password security enabled or to disable the password security.

To leave the password security enabled:

1. Turn on or reboot your system by pressing <Ctrl><Alt><Del>.
2. Press <Enter>.
3. Type your password and press <Enter>.

To disable the password security:

1. Turn on or reboot your system by pressing <Ctrl><Alt><Del>.
2. Press <Ctrl><Enter>.

When the **Password Status** option is set to **Locked** whenever you turn on your system or reboot your system by pressing <Ctrl><Alt><Del>, type your password and press <Enter> at the prompt.

After you type the correct system password and press <Enter>, your system operates as usual.

If an incorrect system password is entered, the system displays a message and prompts you to re-enter your password. You have three attempts to enter the correct password. After the third unsuccessful attempt, the system displays an error message showing the number of unsuccessful attempts and that the system has halted and will shut down. This message can alert you to an unauthorized person attempting to use your system.

Even after you shut down and restart the system, the error message continues to be displayed until the correct password is entered.

NOTE: You can use the **Password Status** option in conjunction with the **System Password** and **Setup Password** options to further protect your system from unauthorized changes.

Deleting or Changing an Existing System Password

1. When prompted, press <Ctrl><Enter> to disable the existing system password.

   If you are asked to enter your setup password, contact your network administrator.

2. Enter the System Setup program by pressing <F2> during POST.
3. Select the **System Security** screen field to verify that the **Password Status** option is set to **Unlocked**.
4. When prompted, type the system password.
5. Confirm that **Not Enabled** is displayed for the **System Password** option.

   If **Not Enabled** is displayed for the **System Password** option, the system password has been deleted. If **Enabled** is displayed for the **System Password** option, press the <Alt><b> key combination to restart the system, and then repeat steps 2 through 5.

Using the Setup Password

Assigning a Setup Password

You can assign (or change) a setup password only when the **Setup Password** option is set to **Not Enabled**. To assign a setup password, highlight the **Setup Password** option and press the **<+>** or **<–>** key. The system prompts you to enter and verify the password. If a character is illegal for password use, the system beeps.

NOTE: The setup password can be the same as the system password. If the two passwords are different, the setup password can be used as an alternate system password. However, the system password cannot be used in place of the setup password.

You can use up to 32 characters in your password.

As you press each character key (or the spacebar for a blank space), a placeholder appears in the field.

The password assignment is not case-sensitive. However, certain key combinations are not valid. If you enter one of these combinations, the system beeps. To erase a character when entering your password, press <Backspace> or the left-arrow key.

After you verify the password, the **Setup Password** setting changes to **Enabled**. The next time you enter the System Setup program, the system prompts you for the setup password.

A change to the **Setup Password** option becomes effective immediately (restarting the system is not required).

Operating With a Setup Password Enabled

If **Setup Password** is set to **Enabled**, you must enter the correct setup password before you can modify most of the System Setup options. When you start the System Setup program, the program prompts you to enter a password.

If you do not enter the correct password in three attempts, the system lets you view, but not modify, the System Setup screens—with the following exception: If **System Password** is not set to **Enabled** and is not locked through the **Password Status** option, you can assign a system password (however, you cannot disable or change an existing system password).

NOTE: You can use the **Password Status** option in conjunction with the **Setup Password** option to protect the system password from unauthorized changes.

Deleting or Changing an Existing Setup Password

1. Enter the System Setup program and select the **System Security** option.
2. Highlight the **Setup Password** option, press <Enter> to access the setup password window, and press <Enter> twice to clear the existing setup password.

   The setting changes to **Not Enabled**.
3. If you want to assign a new setup password, perform the steps in "Assigning a Setup Password."

Disabling a Forgotten Password

See your *Installation and Troubleshooting Guide*.

Acquiring the asset.com Utility

The **asset.com** utility is not located in the Service Mode section of the *Dell OpenManage Server Assistant* CD. To acquire this utility, use the *Server Assistant* CD to create a bootable diskette; the utility is then automatically created on that diskette. The **asset.com** utility will be available in the Service Mode section in future releases of the *Server Assistant* CD.

Baseboard Management Controller

This section provides information regarding the BMC. For detailed information regarding the BMC, see the *Dell OpenManage Baseboard Management Controller User's Guide* and the *Dell PowerConnect 5316M CLI Reference Guide.*

IP Address-Related Items

The following items apply to the BMC IP address:

- The BMC IP address and the host port 1(the first one) IP address must be set to the same value. This means that if the host is using DHCP, the BMC LAN channel must be turned off.
- Ensure that the gateway IP address is set to the correct subnet and the IP address is correct when routing packets to the BMC. The BMC will properly respond to routed packets if only the IP address is correct, but some packets may be lost if the gateway IP address is incorrect.
- Any host application that monitors ports 623 and 644 cannot be executed from port 1 (the first one) of a server module. If you attempt this, the network packets will be sent to the BMC instead of the host. Use port 2 instead.

Unsupported BMC Features and BMC Particulars

The following items describe BMC particulars and features that are not supported by the BMC on this system.

- The IPMI Shell does not allow a user with administrator-level BMC user privileges to set and change user privileges.
- The server module does not have an external serial connector; therefore, Terminal and Basic mode are not supported through a serial port for out-of-band (IPMI) management.

  NOTE: Console redirection can be set to the DRAC/MC module if use of its serial port is desired.

- Alerts (PET), Platform Event Filters (PEF), and DHCP are not supported as there are no alert destination or IP Source options in the BMC setup.
- To prevent heavy ARP request traffic to the BMC, the BMC does not receive any ARP requests as they are routed only to the host.
- The BMC sends gratuitous ARPs every 10 seconds to allow a remote host to discover the BMC if the host's operating system is not communicating.
- The server module's front-panel power and KVM buttons are directly connected to the BMC. If the BMC program becomes misconfigured or corrupt, the power button may not operate.
- Do not use the keyboard sequence to switch server modules or turn off the server module when updating the BMC firmware. Otherwise, the update may fail. If this does occur, restart the update.

BMC VLAN Tagging Support

The BMC supports VLAN (Virtual LAN) tagging for network traffic. VLANs are configured on the network switch and are given a VLAN ID or tag. Ports on the switch can belong to one or more VLAN and can have one of the following VLAN settings:

- Tagged — The packets coming out of the switch port contain the VLAN tag. In this case you should enable VLAN tags on the BMC and set the BMC VLAN tag (or ID) to the same value as the switch port. Otherwise the BMC will not respond to incoming network traffic. Note that setting a VLAN tag on the BMC also causes the BMC to insert the VLAN tag to all outgoing network packets.
- Untagged — The packets coming out of the switch port do not contain the VLAN tag. In this case you should disable VLAN tags on the BMC. By default, VLAN tags are disabled on the BMC.

  NOTE: See the *Dell PowerConnect 5316M CLI Reference Guide* for more information about using the VLAN commands.

Back to Contents Page

Back to Contents Page

Glossary

Dell™ PowerEdge™ 1855 Systems User's Guide

This section defines or identifies technical terms, abbreviations, and acronyms used in your system documents.

A — Ampere(s).

AC — Alternating current.

ACPI — Advanced Configuration and Power Interface. A standard interface for enabling the operating system to direct configuration and power management.

ambient temperature — The temperature of the area or room where the system is located.

ANSI — American National Standards Institute. The primary organization for developing technology standards in the U.S.

application — Software designed to help you perform a specific task or series of tasks. Applications run from the operating system.

ASCII — American Standard Code for Information Interchange.

asset tag — An individual code assigned to a system, usually by an administrator, for security or tracking purposes.

backup — A copy of a program or data file. As a precaution, back up your system's hard drive on a regular basis. Before making a change to the configuration of your system, back up important start-up files from your operating system.

backup battery — A battery that maintains system configuration, date, and time information in a special section of memory when the system is turned off.

beep code — A diagnostic message in the form of a pattern of beeps from your system's speaker. For example, one beep, followed by a second beep, and then a burst of three beeps is beep code 1-1-3.

BIOS — Basic input/output system. Your system's BIOS contains programs stored on a flash memory chip. The BIOS controls the following:

Communications between the processor and peripheral devices

Miscellaneous functions, such as system messages

bit — The smallest unit of information interpreted by your system.

blade — A module that contains a processor, memory, and a hard drive. The modules are mounted into a chassis that includes power supplies and fans.

BMC — Baseboard management controller.

boot routine — A program that clears all memory, initializes devices, and loads the operating system when you start your system. Unless the operating system fails to respond, you can reboot (also called *warm boot*) your system by pressing <Ctrl><Alt><Del>. Otherwise, you must restart the system by pressing the reset button or by turning the system off and then back on.

bootable diskette — A diskette that is used to start your system if the system will not boot from the hard drive.

BTU — British thermal unit.

bus — An information pathway between the components of a system. Your system contains an expansion bus that allows the processor to communicate with controllers for the peripheral devices connected to the system. Your system also contains an address bus and a data bus for communications between the processor and RAM.

C — Celsius.

cache — A fast storage area that keeps a copy of data or instructions for quick data retrieval. When a program makes a request to a disk drive for data that is in the cache, the disk-cache utility can retrieve the data from RAM faster than from the disk drive.

CD — Compact disc. CD drives use optical technology to read data from CDs.

cm — Centimeter(s).

cmos — Complementary metal-oxide semiconductor.

component — As they relate to DMI, components include operating systems, computer systems, expansion cards, and peripherals that are compatible with DMI. Each component is made up of groups and attributes that are defined as relevant to that component.

COM*n* — The device names for the serial ports on your system.

control panel — The part of the system that contains indicators and controls, such as the power button and power indicator.

controller — A chip that controls the transfer of data between the processor and memory or between the processor and a peripheral.

conventional memory — The first 640 KB of RAM. Conventional memory is found in all systems. Unless they are specially designed, MS-DOS® programs are limited to running in conventional memory.

coprocessor — A chip that relieves the system's processor of specific processing tasks. A math coprocessor, for example, handles numeric processing.

CPU — Central processing unit. See *processor*.

DC — Direct current.

DDR — Double-data rate. A technology in memory modules that potentially doubles the output.

device driver — A program that allows the operating system or some other program to interface correctly with a peripheral. Some device drivers—such as network drivers—must be loaded from the **config.sys** file or as memory-resident programs (usually, from the **autoexec.bat** file). Others must load when you start the program for which they were designed.

DHCP — Dynamic Host Configuration Protocol. A method of automatically assigning an IP address to a client system.

diagnostics — A comprehensive set of tests for your system.

DIMM — Dual in-line memory module. See also *memory module*.

DIN — *Deutsche Industrie Norm*.

directory — Directories help keep related files organized on a disk in a hierarchical, "inverted tree" structure. Each disk has a "root" directory. Additional directories that branch off the root directory are called *subdirectories*. Subdirectories may contain additional directories branching off them.

DMA — Direct memory access. A DMA channel allows certain types of data transfer between RAM and a device to bypass the processor.

DMI — Desktop Management Interface. DMI enables the management of your system's software and hardware by collecting information about the system's components, such as the operating system, memory, peripherals, expansion cards, and asset tag.

DNS — Domain Name System. A method of translating Internet domain names, such as **www.dell.com**, into IP addresses, such as 143.166.83.200.

DRAC/MC — Dell Remote Access Controller/
Modular Chassis is used to manage the modules within the system.

DRAM — Dynamic random-access memory. A system's RAM is usually made up entirely of DRAM chips.

DVD — Digital versatile disc.

ECC — Error checking and correction.

EEPROM — Electronically erasable programmable read-only memory.

EMC — Electromagnetic compatibility.

EMI — Electromagnetic interference.

ERA — Embedded remote access. ERA allows you to perform remote, or "out-of-band," server management on your network server using a remote access controller.

ESD — Electrostatic discharge.

ESM — Embedded server management.

expansion bus — Your system contains an expansion bus that allows the processor to communicate with controllers for peripherals, such as NICs.

expansion card — An add-in card, such as a NIC or SCSI adapter, that plugs into an expansion-card connector on the system board. An expansion card adds some specialized function to the system by providing an interface between the expansion bus and a peripheral.

expansion-card connector — A connector on the system board or riser board for plugging in an expansion card.

F — Fahrenheit.

FAT — File allocation table. The file system structure used by MS-DOS to organize and keep track of file storage. The Microsoft® Windows® operating systems can optionally use a FAT file system structure.

flash memory — A type of EEPROM chip that can be reprogrammed from a utility on diskette while still installed in a system; most EEPROM chips can only be rewritten with special programming equipment.

format — To prepare a hard drive or diskette for storing files. An unconditional format deletes all data stored on the disk.

FSB — Front-side bus. The FSB is the data path and physical interface between the processor and the main memory (RAM).

ft — Feet.

FTP — File transfer protocol.

g — Gram(s).

G — Gravities.

Gb — Gigabit(s); 1024 megabits or 1,073,741,824 bits.

GB — Gigabyte(s); 1024 megabytes or 1,073,741,824 bytes. However, when referring to hard-drive capacity, the term is usually rounded to 1,000,000,000 bytes.

graphics mode — A video mode that can be defined as *x* horizontal by *y* vertical pixels by *z* colors.

group — As it relates to DMI, a group is a data structure that defines common information, or attributes, about a manageable component.

guarding — A type of data redundancy in which a set of physical drives stores data and an additional drive stores parity data. See also *mirroring*, *striping*, and *RAID*.

h — Hexadecimal. A base-16 numbering system, often used in programming to identify addresses in the system's RAM and I/O memory addresses for devices. In text, hexadecimal numbers are often followed by *h*.

headless system — A system or device that functions without having a keyboard, mouse, or monitor attached. Normally, headless systems are managed over a network using an Internet browser.

host adapter — A host adapter implements communication between the system's bus and the controller for a peripheral device. (Hard-drive controller subsystems include integrated host adapter circuitry.) To add a SCSI expansion bus to your system, you must install or connect the appropriate host adapter.

Hz — Hertz.

I/O — Input/output. A keyboard is an input device, and a monitor is an output device. In general, I/O activity can be differentiated from computational activity.

ID — Identification.

IDE — Integrated drive electronics. A standard interface between the system board and storage devices.

integrated mirroring — Provides simultaneous physical mirroring of two drives. Integrated mirroring functionality is provided by the system's hardware. See also *mirroring*.

internal processor cache — An instruction and data cache built into the processor.

IP — Internet Protocol.

IPX — Internet package exchange.

IRQ — Interrupt request. A signal that data is about to be sent to or received by a peripheral device travels by an IRQ line to the processor. Each peripheral connection must be assigned an IRQ number. Two devices can share the same IRQ assignment, but you cannot operate both devices simultaneously.

jumper — Small blocks on a circuit board with two or more pins emerging from them. Plastic plugs containing a wire fit down over the pins. The wire connects the pins and creates a circuit, providing a simple and reversible method of changing the circuitry in a board.

K — Kilo-; 1000.

Kb — Kilobit(s); 1024 bits.

KB — Kilobyte(s); 1024 bytes.

Kbps — Kilobit(s) per second.

KBps — Kilobyte(s) per second.

key combination — A command requiring you to press multiple keys at the same time (for example, <Ctrl><Alt><Del>).

kg — Kilogram(s); 1000 grams.

kHz — Kilohertz.

KMM — Keyboard/monitor/mouse.

KVM — Keyboard/video/mouse. KVM refers to a switch that allows selection of the system from which the video is displayed and for which the keyboard and mouse are used.

LAN — Local area network. A LAN is usually confined to the same building or a few nearby buildings, with all equipment linked by wiring dedicated specifically to the LAN.

lb — Pound(s).

LCD — Liquid crystal display.

LED — Light-emitting diode. An electronic device that lights up when a current is passed through it.

Linux — A version of the UNIX® operating system that runs on a variety of hardware systems. Linux is open source software, which is freely available; however, the full distribution of Linux along with technical support and training are available for a fee from vendors such as Red Hat Software.

local bus — On a system with local-bus expansion capability, certain peripheral devices (such as the video adapter circuitry) can be designed to run much faster than they would with a traditional expansion bus. See also *bus*.

LVD — Low voltage differential.

m — Meter(s).

mA — Milliampere(s).

MAC address — Media Access Control address. Your system's unique hardware number on a network.

mAh — Milliampere-hour(s).

Mb — Megabit(s); 1,048,576 bits.

MB — Megabyte(s); 1,048,576 bytes. However, when referring to hard-drive capacity, the term is often rounded to mean 1,000,000 bytes.

Mbps — Megabits per second.

MBps — Megabytes per second.

MBR — Master boot record.

memory address — A specific location, usually expressed as a hexadecimal number, in the system's RAM.

memory module — A small circuit board containing DRAM chips that connects to the system board.

memory — An area in your system that stores basic system data. A system can contain several different forms of memory, such as integrated memory (ROM and RAM) and add-in memory modules (DIMMs).

MHz — Megahertz.

mirroring — A type of data redundancy in which a set of physical drives stores data and one or more sets of additional drives stores duplicate copies of the data. Mirroring functionality is provided by software. See also *guarding*, *integrated mirroring*, *striping*, and *RAID*.

mm — Millimeter(s).

ms — Millisecond(s).

MS-DOS® — Microsoft Disk Operating System.

NAS — Network Attached Storage. NAS is one of the concepts used for implementing shared storage on a network. NAS systems have their own operating systems, integrated hardware, and software that are optimized to serve specific storage needs.

NIC — Network interface controller. A device that is installed or integrated in a system to allow connection to a network.

NMI — Nonmaskable interrupt. A device sends an NMI to signal the processor about hardware errors.

ns — Nanosecond(s).

NTFS — The NT File System option in the Windows 2000 operating system.

NVRAM — Nonvolatile random-access memory. Memory that does not lose its contents when you turn off your system. NVRAM is used for maintaining the date, time, and system configuration information.

parity — Redundant information that is associated with a block of data.

partition — You can divide a hard drive into multiple physical sections called *partitions* with the **fdisk** command. Each partition can contain multiple logical drives. You must format each logical drive with the **format** command.

PCI — Peripheral Component Interconnect. A standard for local-bus implementation.

PDU — Power distribution unit. A power source with multiple power outlets that provides electrical power to servers and storage systems in a rack.

peripheral — An internal or external device, such as a diskette drive or keyboard, connected to a system.

PGA — Pin grid array. A type of processor socket that allows you to remove the processor chip.

pixel — A single point on a video display. Pixels are arranged in rows and columns to create an image. A video resolution, such as 640 x 480, is expressed as the number of pixels across by the number of pixels up and down.

POST — Power-on self-test. Before the operating system loads when you turn on your system, the POST tests various system components such as RAM and hard drives.

processor — The primary computational chip inside the system that controls the interpretation and execution of arithmetic and logic functions. Software written for one processor must usually be revised to run on another processor. *CPU* is a synonym for processor.

protected mode — An operating mode that allows operating systems to implement:

A memory address space of 16 MB to 4 GB

Multitasking

Virtual memory, a method for increasing addressable memory by using the hard drive

The Windows 2000 and UNIX 32-bit operating systems run in protected mode. MS-DOS cannot run in protected mode.

PS/2 — Personal System/2.

PXE — Preboot eXecution Environment. A way of booting a system via a LAN (without a hard drive or bootable diskette).

RAC — Remote access controller.

RAID — Redundant array of independent disks. A method of providing data redundancy. Some common implementations of RAID include RAID 0, RAID 1, RAID 5, RAID 10, and RAID 50. See also *guarding*, *mirroring*, and *striping*.

RAM — Random-access memory. The system's primary temporary storage area for program instructions and data. Any information stored in RAM is lost when

you turn off your system.

RAS — Remote Access Service. This service allows users running the Windows operating system to remotely access a network from their system using a modem.

readme file — A text file, usually shipped with software or hardware, that contains information supplementing or updating the product's documentation.

read-only file — A read-only file is one that you are prohibited from editing or deleting.

ROM — Read-only memory. Your system contains some programs essential to its operation in ROM code. A ROM chip retains its contents even after you turn off your system. Examples of code in ROM include the program that initiates your system's boot routine and the POST.

ROMB — RAID on motherboard.

rpm — Revolutions per minute.

RTC — Real-time clock.

SATA — Serial Advanced Technology Attachment. A standard interface between the system board and storage devices.

SCSI — Small computer system interface. A n I/O bus interface with faster data transmission rates than standard ports.

SDRAM — Synchronous dynamic random-access memory.

sec — Second(s).

serial port — An I/O port used most often to connect a modem to your system. You can usually identify a serial port on your system by its 9-pin connector.

service tag — A bar code label on the system used to identify it when you call Dell for technical support.

SMART — Self-Monitoring Analysis and Reporting Technology. Allows hard drives to report errors and failures to the system BIOS and then display an error message on the screen.

SMP — Symmetric multiprocessing. Used to describe a system that has two or more processors connected via a high-bandwidth link and managed by an operating system, where each processor has equal access to I/O devices.

SNMP — Simple Network Management Protocol. A standard interface that allows a network manager to remotely monitor and manage workstations.

SOL — Serial Over LAN.

striping — Disk striping writes data across three or more disks in an array, but only uses a portion of the space on each disk. The amount of space used by a "stripe" is the same on each disk used. A virtual disk may use several stripes on the same set of disks in an array. See also *guarding*, *mirroring*, and *RAID.*

SVGA — Super video graphics array. VGA and SVGA are video standards for video adapters with greater resolution and color display capabilities than previous standards.

system board — As the main circuit board, the system board usually contains most of your system's integral components, such as the processor, RAM, controllers for peripherals, and various ROM chips.

system configuration information — Data stored in memory that tells a system what hardware is installed and how the system should be configured for operation.

system diskette — See *bootable diskette*.

system memory — See *RAM*.

System Setup program — A BIOS-based program that allows you to configure your system's hardware and customize the system's operation by setting features such as password protection. Because the System Setup program is stored in NVRAM, any settings remain in effect until you change them again.

system.ini file — A start-up file for the Windows operating system. When you start Windows, it consults the **system.ini** file to determine a variety of options for the Windows operating environment. Among other things, the **system.ini** file records which video, mouse, and keyboard drivers are installed for Windows.

TCP/IP — Transmission Control Protocol/Internet Protocol.

termination — Some devices (such as the last device at each end of a SCSI cable) must be terminated to prevent reflections and spurious signals in the cable. When such devices are connected in a series, you may need to enable or disable the termination on these devices by changing jumper or switch settings on the devices or by changing settings in the configuration software for the devices.

UNIX — Universal Internet Exchange. UNIX, the precursor to Linux, is an operating system written in the C programming language.

uplink port — A port on a network hub or switch used to connect to other hubs or switches without requiring a crossover cable.

UPS — Uninterruptible power supply. A battery-powered unit that automatically supplies power to your system in the event of an electrical failure.

USB — Universal Serial Bus. A USB connector provides a single connection point for multiple USB-compliant devices, such as mice and keyboards. USB devices can be connected and disconnected while the system is running.

utility — A program used to manage system resources—memory, disk drives, or printers, for example.

UTP — Unshielded twisted pair. A type of wiring used to connect systems in a business or home to a telephone line.

V — Volt(s).

VAC — Volt(s) alternating current.

VDC — Volt(s) direct current.

VGA — Video graphics array. VGA and SVGA are video standards for video adapters with greater resolution and color display capabilities than previous standards.

video adapter — The logical circuitry that provides (in combination with the monitor) your system's video capabilities. A video adapter may be integrated into the system board or may be an expansion card that plugs into an expansion slot.

video driver — A program that allows graphics-mode application programs and operating systems to display at a chosen resolution with the desired number of colors. Video drivers may need to match the video adapter installed in the system.

video memory — Most VGA and SVGA video adapters include memory chips in addition to your system's RAM. The amount of video memory installed primarily influences the number of colors that a program can display (with the appropriate video drivers and monitor capabilities).

video resolution — Video resolution (800 x 600, for example) is expressed as the number of pixels across by the number of pixels up and down. To display a program at a specific graphics resolution, you must install the appropriate video drivers and your monitor must support the resolution.

W — Watt(s).

WH — Watt-hour(s).

win.ini file — A start-up file for the Windows operating system. When you start Windows, it consults the **win.ini** file to determine a variety of options for the Windows operating environment. The **win.ini** file also usually includes sections that contain optional settings for Windows application programs that are installed on the hard drive.

Windows 2000 — An integrated and complete Microsoft Windows operating system that does not require MS-DOS and that provides advanced operating system performance, improved ease of use, enhanced workgroup functionality, and simplified file management and browsing.

Windows Powered — A Windows operating system designed for use on NAS systems. For NAS systems, the Windows Powered operating system is dedicated to file service for network clients.
Windows Server 2003 — A set of Microsoft software technologies that enable software integration through the use of XML Web services. XML Web services are small reusable applications written in XML that allow data to be communicated between otherwise unconnected sources.
XML — Extensible Markup Language. XML is a way to create common information formats and to share both the format and the data on the World Wide Web, intranets, and elsewhere.
ZIF — Zero insertion force.

Back to Contents Page