MIRAPOINT ®

RazorSafe 700 (RS700) Hardware Guide

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Preface

This guide documents the hardware elements, appliance component installation, maintenance issues and troubleshooting for the Mirapoint RazorSafe 700 (RS700) appliances.

For a complete list and description of the Mirapoint product line, contact your local reseller, or visit Mirapoint online at:

http://www.mirapoint.com

This guide contains the following chapters:

◆ Chapter 1, About Your Appliance—describes the various parts, features, indicators, codes and messages of the appliance.

◆ Chapter 2, Replacing Appliance Components—describes the component configurations, recommended servicing tools and servicing procedures for removing and installing the various field-supported components.

◆ Appendix A, Troubleshooting Your Appliance—describes potential component failures and provides replacement procedures.

◆ Appendix B, Jumpers and Connectors—describes the various appliance jumpers, switches and connectors on the system board.

About Mirapoint Documentation

Documentation for all Mirapoint products is available through the Information Library on the Mirapoint Support website:

https://support.mirapoint.com/

The Information Library provides the hardware and software documentation for all supported Mirapoint releases and appliances, and the Support Knowledge Base. The Support site is accessible to all customers with a valid Support Contract. If your company has a valid contract but you need a Support login ID, email support@mirapoint.com.

For a glossary of terms associated with Mirapoint products, see http://www.mirapoint.com/glossary/.

Getting Technical Support

If you experience problems with your appliance, contact the company from which you purchased your Mirapoint appliance.

If you purchased your appliance directly from Mirapoint, contact Mirapoint Technical Support by email, telephone, or via the Mirapoint Support website:

Email: support@mirapoint.com
(China) support@mirapoint.com.cn

Telephone:

❍ (USA) 1-877-MIRAPOINT (1-877-647-2764)

❍ (UK) +44 (or 0) 1628-535699

❍ (China) 400 707 1086

❍ (Australia) 1 800 633 784

❍ (Elsewhere) +1 408-720-3800

Website: https://support.mirapoint.com/

When contacting Technical Support, be prepared with the following information about your appliance:

Table 1   Appliance Information for Technical Support

Information	MOS CLI command (Message Server, RazorGate)	AOS UI Location (RazorSafe)
Software release	`Version`	In the **Status** tab, select **System Info.**
Host ID	`License Hostid`	In the **Status** tab, select **System Info.**
Serial number	`Model Get Serial`	In the **Status** tab, select **System Info.**
Hardware model	`Model Get Chassis`	In the **Status** tab, select **System Info.**

Typographic Conventions

Table 2 describes what the different fonts and typefaces indicate in this manual.

Table 2   Typographic Conventions in This Manual

Typeface	Use	Example
Bold	User interface elements	From the **File** menu, select **Save As...**
* Command-line interface (CLI) commands are case-*in*sensitive, except where noted. For readability, commands in this manual are shown in mixed case (for example, `License Hostid`).		

Table 2   Typographic Conventions in This Manual (Continued)

Typeface	Use	Example
Italic	Definitions, emphasis, or titles	A *folder* is a container that stores email messages. Specify *at least two* DNS servers. For more information, see the *Mirapoint Message Server Administrator's Guide*.
`Courier`	Screen display text, command names, or text to type *	`Enter your IP address:` Use the `License Hostid` command. At the prompt, type `Version`.
`Courier Italic`	Variables for which you substitute when you type	`your_IP_address`

* Command-line interface (CLI) commands are case-*in*sensitive, except where noted. For readability, commands in this manual are shown in mixed case (for example, `License Hostid`).

Iconic Conventions

Table 3 describes what the different icons in this manual indicate.

Table 3   Iconic Conventions in This Manual

Icon	Use
	Best practices information (Mirapoint recommendations)
	Note information that *should* be read
	Critical information
	License information
	Potential of causing bodily harm (hardware only)

About Your Appliance

This chapter provides a high-level introduction of the Mirapoint RazorSafe 700 (RS700) appliance, including:

Accessing Appliance Features During Startup

The following keystrokes provide access to system features during startup.

Keystroke	Description
<F2>	Enters the system BIOS.
<F10>	Enters System Services, which opens the Unified Server Configurator from which you can access utilities such as system diagnostics. For usage, contact your Mirapoint representative. Some Unified Server Configurator processing, such as software updates, can cause virtual devices to be created that at times may appear as USB devices attached to your appliance. These connections are both secure and temporary, and can be disregarded.

Keystroke	Description
<Ctrl><E>	Enters the iRAC Configuration Utility, which allows access to the appliance event log (SEL) and configuration of remote access to the appliance. For usage, contact your Mirapoint representative.
<Ctrl><R>	Enters the RAID configuration utility. For more information, see the documentation for your RAID card.

Front-Panel Features and Indicators

Figure 1   Front-Panel Features and Indicators (3.5-Inch Chassis)

Item	Indicator, Button, or Connector	Icon	Description
1	Information tag		A slide-out label panel for system information including the Express Service tag, Embedded NIC1 MAC address, and iRAC6 Enterprise card MAC address.
2	Power-on indicator, power button	⏻	The power-on indicator lights when the appliance power is on. The power button controls the DC power supply output to the appliance. When the appliance bezel is installed, the power button is not accessible. When powering on the appliance, the video monitor can take up to 25 seconds to display an image, depending on the amount of memory installed in the appliance. **Caution:** Never use the power button to to power off the appliance.
3	NMI button	⊖	Used to troubleshoot software and device driver errors when using certain operating systems. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the AOS release's documentation.

Item	Indicator, Button, or Connector	Icon	Description
4	USB connectors (2)		Connects USB devices to the appliance. The ports are USB 2.0-complaint.
5	Video connector		Connects a monitor to the appliance.
6	LCD menu buttons		Allows you to navigate the control panel LCD menu.
7	LCD panel		Provides system ID, status information, and appliance error messages. The LCD lights blue during normal appliance operation. The LCD lights amber when the appliance needs attention, and the LCD panel displays an error code followed by descriptive text. If the appliance is connected to AC power and an error has been detected, the LCD lights amber regardless of whether the appliance has been powered on.
8	System identification button		The identification buttons on the front and back panels can be used to locate a particular appliance within a rack. When one of these buttons is pushed, the LCD panel on the front and the appliance status indicator on the back flash blue until one of the buttons is pushed again.
9	Optical drive		One optional slim-line SATA DVD-ROM drive.
10	Hard drives		Up to six 3.5-inch hot-swappable.

LCD Panel Features

The appliance's LCD panel provides appliance information and status messages to signify when the appliance is operating correctly or when the appliance needs attention. See LCD Status Messages on page 12 for information on specific status codes.

The LCD backlight lights blue during normal operating conditions and lights amber to indicate an error condition. When the appliance is in standby mode, the LCD backlight is off and can be turned on by pressing the **Select** button on the LCD panel. The LCD backlight remains off if LCD messaging is turned off through the iRAC utility, the LCD panel, or other tools.

Figure 2   LCD Panel Features
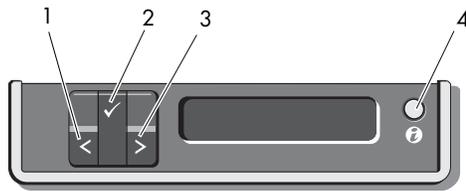
Item	Buttons	Description
1	Left	Moves the cursor back in one-step increments.
2	Select	Selects the menu item highlighted by the cursor.
3	Right	Moves the cursor forward in one-step increments. During message scrolling: ❖ Press once to increase scrolling speed. ❖ Press again to stop. ❖ Press again to return to default scrolling speed. ❖ Press again to repeat the cycle.
4	System ID	Turns the system ID mode on and off. Press quickly to toggle the system ID on and off. If the appliance hangs during POST, press and hold the system ID button for more than five seconds to enter BIOS Progress mode.

Home Screen

The Home screen displays user-configurable information about the appliance. This screen is displayed during normal appliance operation when there are no status messages or errors present. When the appliance is in standby, the LCD backlight turns off after five minutes of inactivity if there are no error messages. Press one of the three navigation buttons (Select, Left, or Right) to view the Home screen.

To navigate to the Home screen from another menu, continue to select the up arrow ↕ until the Home icon ▲ is displayed, and then select the Home icon.

From the Home screen, press the **Select** button to enter the main menu. See the following tables for information on the **Setup** and **View** submenus.

Setup Menu

When selecting an option in the Setup menu, you are asked to confirm the option before you can continue.

View Menu

Option	Description
DRAC IP	Displays the **IPv4** or **IPv6** addresses for the iDRAC6. Addresses include **DNS** (**Primary** and **Secondary**), **Gateway, IP,** and **Subnet** (IPv6 does not have Subnet).
MAC	Displays the MAC addresses for **DRAC, iSCSI***n*, or **NET***n*.
Name	Displays the name of the **Host, Model,** or **User String** for the appliance.
Number	Displays the **Asset tag** or the **Service tag** for the appliance.
Power	Displays the power output of the appliance in BTU/hr or Watts. The display format can be configured in the Set home" submenu of the Setup menu (For more information, see Setup Menu on page 8).
Temperature	Displays the temperature of the appliance in Celsius or Fahrenheit. The display format can be configured in the Set home" submenu of the Setup menu (For more information, see Setup Menu on page 8).

Hard-Drive Indicator Patterns for RAID

Figure 3   Hard-Drive Indicators

3-in carrier

1	drive-activity indicator (green)	2	drive-status indicator (green and amber)

Drive-Status Indicator Pattern (RAID Only)	Condition
Blinks green two times per second	Identify drive/preparing for removal

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Drive-Status Indicator Pattern (RAID Only)	Condition
Off	Drive ready for insertion or removal The drive status indicator remains off until all hard drives are initialized after appliance power is applied. Drives are not ready for insertion or removal during this time.
Blinks green, amber, and off	Drive predicted failure
Blinks amber four times per second	Drive failed
Blinks green slowly	Drive rebuilding
Steady green	Drive online

Back Panel Features and Indicators

Figure 4   Back Panel Features
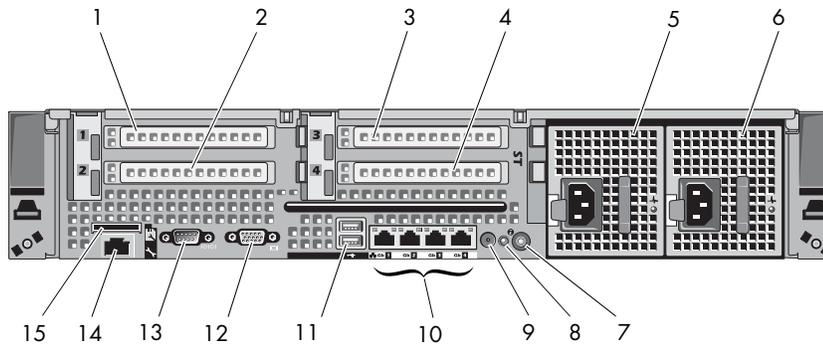
Item	Indicator, Button, or Connector	Icon	Description
1	PCIe slot 1		PCI Express (Generation 2) x4-link expansion slot (full-height, 30.99-cm [12.2-in] length)
2	PCIe slot 2		PCIe x4-link Gen 2 expansion slot (low-profile, 24.13-cm [9.5-in] length)
3	PCIe slot 3		PCIe x8-link Gen 2 expansion slot (full-height, 24.13-cm [9.5-in] length)
4	PCIe slot 4		PCIe x8-link Gen 2 expansion slot (full-height, 24.13-cm [9.5-in] length)
5	power supply 1 (PS1)		870-W power supply
6	power supply 2 (PS2)		870-W power supply

Item	Indicator, Button, or Connector	Icon	Description
7	system identification button		The identification buttons on the front and back panels can be used to locate a particular appliance within a rack. When one of these buttons is pushed, the LCD panel on the front and the appliance status indicator on the back flash blue until one of the buttons is pushed again.
8	appliance status indicator		Provides a power on indicator for the back of the appliance.
9	appliance status indicator connector		Connector for attaching a appliance indicator extension cable that is used on a cable management arm
10	Ethernet connectors (4)		Integrated 10/100/1000 NIC connectors
11	USB connectors (2)		Connects USB devices to the appliance. The ports are USB 2.0-complaint.
12	video connector		Connects a VGA display to the appliance.
13	serial connector		Connects a serial device to the appliance.
14	iRAC6 Enterprise port		Dedicated management port for the iRAC6 Enterprise card.

Power Indicator Codes

An LED indicator on the power button indicates when power is supplied to the appliance and the appliance is operational.

Redundant power supplies have an indicator that shows whether power is present or whether a power fault has occurred.

◆ Not lit—AC power is not connected.

◆ Green—In standby mode, indicates that a valid AC source is connected to the power supply and that the power supply is operational. When the appliance is on, also indicates that the power supply is providing DC power to the appliance.

◆ Amber—Indicates a problem with the power supply.

◆ Alternating green and amber—When hot-adding a power supply, indicates that the power supply is mismatched with the other power supply (a High Output 870-W power supply and an Energy Smart 570-W power supply are installed in the same appliance). Replace the power supply that has the flashing indicator with a power supply that matches the capacity of the other installed power supply.

⚠ When correcting a power supply mismatch, replace *only* the power supply with the flashing indicator. Swapping the opposite power supply to make a matched pair can result in an error condition and unexpected appliance shutdown.

To change from a High Output configuration to an Energy Smart configuration or vice versa, you must power down the appliance.

Figure 5   Power Supply Status Indicator
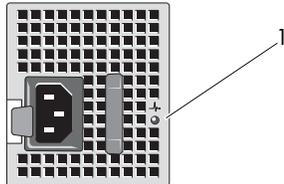
1	power supply status		

NIC Indicator Codes

Figure 6   NIC Indicators
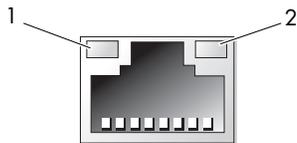
1	link indicator	2	activity indicator

Indicator	Description
Link and activity indicators are off	NIC is not connected to the network.
Link indicator is green	NIC connects to a network link at 1000 Mbps.
Link indicator is amber	NIC connects to a network link at 10/100 Mbps.
Activity indicator is green blinking	Network data actively sending or receiving.

LCD Status Messages

The LCD messages consist of brief text messages that refer to events recorded in the System Event Log (SEL). For information on the SEL and configuring system management settings, see the systems management software documentation.

💡 If your appliance fails to boot, press the System ID button for at least five seconds until an error code appears on the LCD. Record the code, then see Getting Technical Support on page 2.

Viewing Status Messages

If a system error occurs, the LCD screen turns amber. Press the **Select** button to view the list of errors or status messages. Use the left and right arrow buttons to highlight an error number, and press **Select** to view the error.

Removing LCD Status Messages

For faults associated with sensors, such as temperature, voltage, fans, and so on, the LCD message is automatically removed when that sensor returns to a normal state. For other faults, you must take action to remove the message from the display:

◆ Clear the SEL—You can perform this task remotely, but you lose the event history for the appliance.

◆ Power cycle—Power off the appliance and disconnect it from the electrical outlet; wait approximately ten seconds, reconnect the power cable, and restart the appliance.

The following LCD status messages are displayed in the Simple format. For more information about selecting the format in which the messages are displayed, see Setup Menu on page 8.

Table 4   LCD Status Messages

Code	Text	Cause	Corrective Actions
E1000	Failsafe voltage error. Contact support.	Check the appliance event log for critical failure events.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E1114	Ambient Temp exceeds allowed range.	Ambient temperature has a reached a point outside of the allowed range.	See Troubleshooting Appliance Cooling Problems on page 75.
E1116	Memory disabled, temp above range. Power cycle AC.	Memory has exceeded allowable temperature and has been disabled to prevent damage to the components.	Remove AC power to the appliance for 10 seconds and restart the appliance. See Troubleshooting Appliance Cooling Problems on page 75. If the problem persists, see Getting Technical Support on page 2.
E1210	Motherboard battery failure. Check battery.	CMOS battery is missing or the voltage is outside of the allowable range.	See Troubleshooting the System Battery on page 73.

Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E1211	RAID Controller battery failure. Check battery.	RAID battery is either missing, bad, or unable to recharge due to thermal issues.	Reseat the RAID battery connector. See Installing a RAID Battery on page 45 and Troubleshooting Appliance Cooling Problems on page 75.
E1216	3.3V Regulator failure. Reseat PCIe cards.	3.3V voltage regulator has failed.	Remove and reseat the PCIe expansion cards. If the problem persists, see Troubleshooting Expansion Cards on page 80.
E1229	CPU # VCORE Regulator failure. Reseat CPU.	Specified processor VCORE voltage regulator has failed.	Reseat the processors. SeeTroubleshooting the Processors on page 81. If the problem persists, see Getting Technical Support on page 2.
E122A	CPU # VTT Regulator failure. Reseat CPU.	Specified processor VTT voltage regulator has failed.	Reseat the processors. See Troubleshooting the Processors on page 81. If the problem persists, see Getting Technical Support on page 2.
E122C	CPU Power Fault. Power cycle AC.	A power fault was detected when powering up the processors.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E122D	Memory Regulator # Failed. Reseat DIMMs.	One of the memory regulators has failed.	Reseat the memory modules. See Troubleshooting Memory on page 76.
E122E	On-board regulator failed. Call support.	One of the on-board voltage regulators failed.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.

Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E1310	Fan ## RPM exceeding range. Check fan.	RPM of specified fan is outside of the intended operating range.	See Troubleshooting Appliance Cooling Problems on page 75.
E1311	Fan module ## RPM exceeding range. Check fan.	RPM of specified fan in specified module is outside of intended operating range.	See Troubleshooting Appliance Cooling Problems on page 75.
E1313	Fan redundancy lost. Check fans.	The appliance is no longer fan redundant. Another fan failure would put the appliance at risk of over-heating.	Check LCD for additional scrolling messages. See Troubleshooting a Fan on page 75.
E1410	System Fatal Error detected.	A fatal appliance error has been detected.	Check LCD for additional scrolling messages. Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E1414	CPU # temp exceeding range. Check CPU heatsink.	Specified processor is out of acceptable temperature range.	Ensure that the processor heat sinks are properly installed. See Troubleshooting Appliance Cooling Problems on page 75.
E1418	CPU # not detected. Check CPU is seated properly.	Specified processor is missing or bad, and the appliance is in an unsupported configuration.	Ensure that the specified processor is properly installed.
E141C	Unsupported CPU configuration. Check CPU or BIOS revision.	Processors are in an unsupported configuration.	Ensure that your processors match and conform to the type described in the processor technical specifications outlined in the *Mirapoint RazorSafe 7-Series Hardware Getting Started Guide*.

Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E141F	CPU # protocol error. Power cycle AC.	The system BIOS has reported a processor protocol error.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E1420	CPU Bus parity error. Power cycle AC.	The system BIOS has reported a processor bus parity error.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E1422	CPU # machine check error. Power cycle AC.	The system BIOS has reported a machine check error.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E1610	Power Supply # (### W) missing. Check power supply.	Specified power supply was removed or is missing from the appliance.	See Troubleshooting Power Supplies on page 74.
E1614	Power Supply # (### W) error. Check power supply.	Specified power supply has failed.	See Troubleshooting Power Supplies on page 74.
E1618	Predictive failure on Power Supply # (### W). Check PSU.	A power supply fan failure, an over-temperature condition, or power supply communication error has caused the predictive warning of an impending power supply failure.	See Troubleshooting Power Supplies on page 74.
E161C	Power Supply # (### W) lost AC power. Check PSU cables.	Specified power supply is attached to the appliance, but it has lost its AC input.	Check the AC power source for the specified power supply. If the problem persists, see Troubleshooting Power Supplies on page 74.

Table 4 LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E1620	Power Supply # (### W) AC power error. Check PSU cables.	Specified power supply's AC input is outside of the allowable range.	Check the AC power source for the specified power supply. If the problem persists, see Troubleshooting Power Supplies on page 74.
E1624	Lost power supply redundancy. Check PSU cables.	The power supply subsystem is no longer redundant. If the remaining power supply fails, the appliance shuts down.	See Troubleshooting Power Supplies on page 74.
E1626	Power Supply Mismatch. PSU1 = ### W, PSU2 = ### W.	The power supplies in the appliance are not the same wattage.	Ensure that power supplies with matching wattage are installed. See the Technical Specifications outlined in the *Mirapoint RazorSafe 7-Series Hardware Getting Started Guide*.
E1629	Power required > PSU wattage. Check PSU and config.	The appliance configuration requires more power than the power supplies can provide, even with throttling.	Power off power to the appliance, reduce the hardware configuration or install higher-wattage power supplies, and then restart the appliance.
E1710	I/O channel check error. Review & clear SEL.	The system BIOS has reported an I/O channel check.	Check the SEL for more information and then clear the SEL. Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.

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Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E1711	PCI parity error on Bus ## Device ## Function ##	The system BIOS has reported a PCI parity error on a component that resides in PCI configuration space at bus ##, device ##, function ##.	Remove and reseat the PCIe expansion cards. If the problem persists, see Troubleshooting Expansion Cards on page 80.
	PCI parity error on Slot #. Review & clear SEL.	The system BIOS has reported a PCI parity error on a component that resides in the specified slot.	Remove and reseat the PCIe expansion cards. If the problem persists, see Troubleshooting Expansion Cards on page 80.
E1712	PCI system error on Bus ## Device ## Function ##	The system BIOS has reported a PCI system error on a component that resides in PCI configuration space at bus ##, device ##, function ##.	Remove and reseat the PCIe expansion cards. If the problem persists, see Troubleshooting Expansion Cards on page 80.
	PCI system error on Slot #. Review & clear SEL.	The system BIOS has reported a PCI system error on a component that resides in the specified slot.	Reinstall the expansion-card riser. See Expansion Cards and Expansion-Card Risers on page 47. If the problem persists, the riser card or system board is faulty. See Getting Technical Support on page 2.
E1714	Unknown error. Review & clear SEL.	The system BIOS has determined there has been an error in the system, but is unable to determine its origin.	Check the SEL for more information and then clear the SEL. Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.

Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E1715	Fatal I/O Error. Review & clear SEL.	The system BIOS has determined there has been a fatal error in the system.	Check the SEL for more information, and then clear the SEL. Remove AC power to the appliance for 10 seconds, and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E1716	Chipset IERR Bus ## Dev ## Function ##. Review & clear SEL.	The system BIOS has reported a chipset internal error that resides in bus ##, device ##, function ##.	Check the SEL for more information, and then clear the SEL. Remove AC power to the appliance for 10 seconds, and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E1717	CPU # internal error. Review & clear SEL.	The system BIOS has determined that the specified processor has had an internal error.	Check the SEL for more information, and then clear the SEL. Remove AC power to the appliance for 10 seconds, and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E171F	PCIe fatal error on Bus ## Device ## Function ##	The system BIOS has reported a PCIe fatal error on a component that resides in PCI configuration space at bus ##, device ##, function ##.	Remove and reseat the PCIe expansion cards. If the problem persists, see Troubleshooting Expansion Cards on page 80.
	PCIe fatal error on Slot #. Review & clear SEL.	The system BIOS has reported a PCIe fatal error on a component that resides in the specified slot.	Reinstall the expansion-card riser. See Expansion Cards and Expansion-Card Risers on page 47. If the problem persists, the riser card or system-board is faulty. See Getting Technical Support on page 2.

Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E1810	Hard drive ## fault. Review & clear SEL.	The specified hard drive has experienced a fault.	See Troubleshooting a Hard Drive on page 78.
E1812	Hard drive ## removed. Check drive.	The specified hard drive has been removed from the appliance.	Information only.
E1A11	PCI Riser hardware & configuration mismatch. Reconfigure.	PCIe risers are not configured correctly. Some invalid configurations prevent the appliance from powering on.	Reinstall the expansion-card riser. See Expansion Cards and Expansion-Card Risers on page 47. If the problem persists, the riser card or system-board is faulty. See Getting Technical Support on page 2.
E1A12	PCI Riser not detected. Check Riser.	One or both of the PCIe risers are missing. This prevents the appliance from powering on.	Reinstall the missing riser card(s). See Removing Expansion-Card Riser 1 on page 50and Removing Expansion-Card Riser 2 on page 52.
E1A14	SAS cable A failure. Check connection.	SAS cable A is missing or bad.	Reseat the cable. If the problem persists, replace cable. If the problem persists, see Getting Technical Support on page 2.
E1A15	SAS cable B failure. Check connection.	SAS cable B is missing or bad.	Reseat the cable. If the problem persists, replace cable. If the problem persists, see Getting Technical Support on page 2.
E1A1D	Control panel USB cable not detected. Check cable.	USB cable to the control panel is missing or bad.	Reseat the cable. If the problem persists, replace cable. If the problem persists, see Getting Technical Support on page 2.

Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E2010	Memory not detected. Inspect DIMMs.	No memory was detected in the appliance.	Install memory or reseat the memory modules. See Installing Memory Modules on page 56 or Troubleshooting Memory on page 76.
E2011	Memory configuration failure. Check DIMMs.	Memory detected, but is not configurable. Error detected during memory configuration.	See Troubleshooting Memory on page 76.
E2012	Memory configured but unusable. Check DIMMs.	Memory configured, but is unusable.	See Troubleshooting Memory on page 76.
E2013	BIOS unable to shadow memory. Check DIMMs.	The system BIOS failed to copy its flash image into memory.	See TTroubleshooting Memory on page 76.
E2014	CMOS RAM failure. Power cycle AC.	CMOS failure. CMOS RAM not functioning properly.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E2015	DMA Controller failure. Power cycle AC.	DMA controller failure.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E2016	Interrupt Controller failure. Power cycle AC.	Interrupt controller failure.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E2017	Timer refresh failure. Power cycle AC.	Timer refresh failure.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.

Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E2018	Programmable Timer error. Power cycle AC.	Programmable interval timer error.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E2019	Parity error. Power cycle AC.	Parity error.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E201A	SuperIO failure. Power cycle AC.	SIO failure.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E201B	Keyboard Controller error. Power cycle AC.	Keyboard controller failure.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E201C	SMI initialization failure. Power cycle AC.	System management interrupt (SMI) initialization failure.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E201D	Shutdown test failure. Power cycle AC.	BIOS shutdown test failure.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Getting Technical Support on page 2.
E201E	POST memory test failure. Check DIMMs.	BIOS POST memory test failure.	See Troubleshooting Memory on page 76. If the problem persists, see Getting Technical Support on page 2.

Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
E2020	CPU configuration failure. Check screen message.	Processor configuration failure.	Check screen for specific error messages. See Troubleshooting the Processors on page 81.
E2021	Incorrect memory configuration.	Incorrect memory configuration.	Check screen for specific error messages. See Troubleshooting Memory on page 76.
E2022	General failure during POST. Check screen message.	General failure after video.	Check screen for specific error messages.
E2023	BIOS unable to mirror memory. Check DIMMs.	The system BIOS could not enable memory mirroring because of a faulty memory module or an invalid memory configuration.	See Troubleshooting Memory on page 76.
E2110	Multibit Error on DIMM ##. Reseat DIMM.	The memory module in slot ## has had a multi-bit error (MBE).	See Troubleshooting Memory on page 76.
E2111	SBE log disabled on DIMM ##. Reseat DIMM.	The system BIOS has disabled memory single-bit error (SBE) logging and will not log any more SBEs until the appliance is rebooted. ## represents the memory module implicated by the BIOS.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Troubleshooting Memory on page 76.
E2113	Mem mirror OFF on DIMM ## & ##. Power cycle AC.	The system BIOS has disabled memory mirroring because it has determined one half of the mirror has had too many errors. ## & ## represents the memory module pair implicated by the BIOS.	Remove AC power to the appliance for 10 seconds and restart the appliance. If the problem persists, see Troubleshooting Memory on page 76.
I1910	Intrusion detected. Check chassis cover.	appliance cover has been removed.	Information only.

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Table 4   LCD Status Messages (Continued)

Code	Text	Cause	Corrective Actions
I1911	LCD Log Full. Check SEL to review all Errors.	LCD overflow message. A maximum of ten error messages can display sequentially on the LCD. The eleventh message instructs the user to check the SEL for details on the events.	Check the SEL for details on the events. Remove AC power to the appliance for 10 seconds or clear the SEL.
I1912	SEL full. Review & clear log.	The SEL is full of events and is unable to log any more.	Check the SEL for more information and then clear the SEL.
W1228	RAID Controller battery capacity < 24hr.	Warns predictively that the RAID battery has less than 24 hours of charge left.	Allow RAID battery to charge to greater than 24 hours of sustained charge. If problem persists, replace the RAID battery. See Installing a RAID Battery on page 45.
W1627	Power required > PSU wattage. Check PSU and config.	The system configuration requires more power than what the power supply can provide.	Power off power to the appliance, reduce the hardware configuration or install higher-wattage power supplies, and then restart the appliance.
W1628	Performance degraded. Check PSU and system configuration.	The system configuration requires more power than what the power supply can provide, but it can boot if throttled.	Power off power to the appliance, reduce the hardware configuration or install higher-wattage power supplies, and then restart the appliance.

System Messages

System messages appear on the screen to notify you of a possible problem with the appliance.

If you receive a system message not listed in Table 4 on page 13, check the online Knowledge Base at support.mirapoint.com, or contact Mirapoint Technical Support, see Getting Technical Support on page 2.

Warning Messages

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

Warning messages are generated by either the application or the AOS release. For more information, see the documentation that accompanied the AOS release or application.

Diagnostics Messages

The appliance diagnostic utilities may issue messages if you run diagnostic tests on your appliance.

Alert Messages

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

Other Information You May Need

See the safety, regulatory, and warranty information which accompanies your appliance.

◆ The rack documentation, included in the rail kit, describes how to install the rack rails and mount your appliance on to the rack rails.

◆ The *Mirapoint RazorSafe 700 (RS700) Hardware Guide* provides information about the appliance features and describes how to troubleshoot the appliance and install or replace appliance components. This document is available online at support.mirapoint.com.

◆ The CD and DVD media, which accompanies these instructions within the folio, provides documentation and tools for configuring and managing your appliance.

Always first check for updates online at support.mirapoint.com, and read any updates, because they often supersede information in other documents.

Replacing Appliance Components

This chapter describes the component configurations, recommends servicing tools, and servicing procedures for removing and installing the various field-supported components.

Refer to the following sections for details:

Recommended Tools

- ◆ Key to the appliance keylock
- ◆ #1 and #2 Phillips screwdrivers
- ◆ Wrist grounding strap
- ◆ T8, T10, and T15 Torx drivers

Inside the Appliance

> Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

Figure 7   Inside the appliance (3.5-Inch Hard-Drive Chassis)
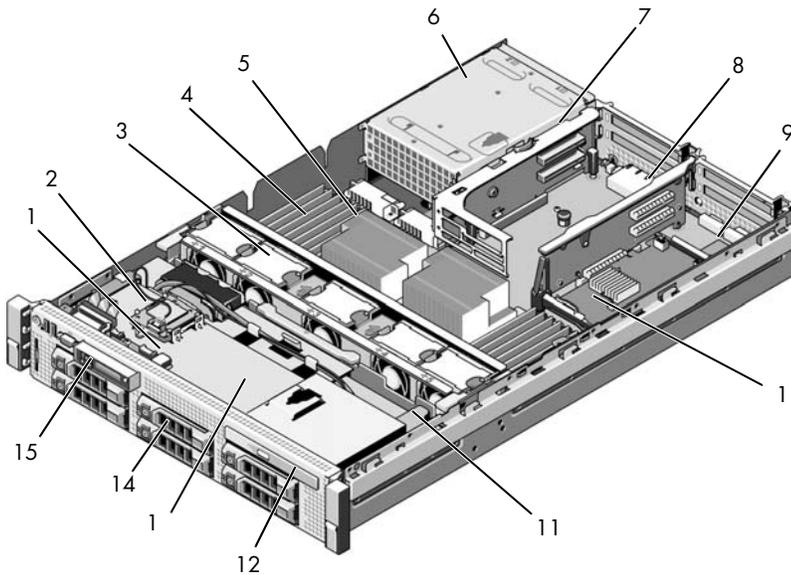
1	USB connector for optional internal USB key	2	Internal SD Module
3	hot-swappable cooling fans (5)	4	memory modules (up to 18 total, 9 for each processor)
5	processors (2)	6	power supply bays (2)
7	riser 2 (PCIe slots 3 and 4)	8	riser 1 (PCIe slots 1 and 2)
9	iRAC6 Enterprise card	10	integrated storage controller card
11	SAS backplane	12	slimline optical drive
13	RAID battery	14	SAS or SATA hard drives (up to 6)
15	control panel		

Front Bezel

A lock on the bezel restricts access to the power button, optical drive, and hard drive(s). The LCD panel and navigation buttons are accessible through the front bezel (Figure 8).

Removing the Front Bezel

To remove the front bezel:

1. Using the appliance key, unlock the bezel.
2. Pull up on the release latch next to the key lock.
3. Rotate the left end of the bezel away from the appliance to release the right end of the bezel.
4. Pull the bezel away from the appliance (Figure 8).

Figure 8   Removing the Front Bezel
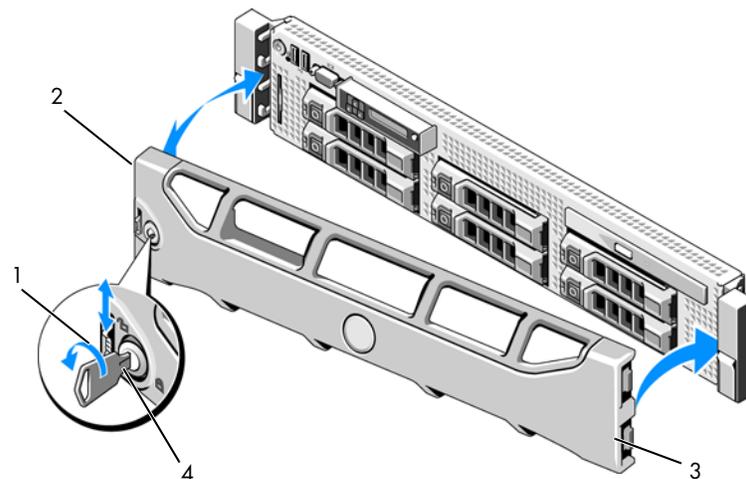
1	release latch	2	bezel
3	hinge tabs	4	key lock

Installing the Front Bezel

To install the front bezel:

1. Insert the hinge tab on the right of the bezel into the slot on the right side of the appliance front panel.
2. Rotate the left side of the bezel toward the appliance.
3. Press the bezel to the appliance to engage the latch.

Opening and Closing the Appliance

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

Whenever you need to lift the appliance, get others to assist you. To avoid injury, do not attempt to lift the appliance by yourself.

Opening the Appliance

To open the appliance:

1. Unless you are installing a hot-swappable component such as a cooling fan or power supply, power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet and peripherals.
2. Rotate the latch release lock counter-clockwise to the unlocked position (Figure 9 on page 31).
3. Lift up on the latch on top of the appliance and slide the cover back (Figure 9 on page 31).
4. Grasp the cover on both sides and lift the cover away from the appliance.

Closing the Appliance

To close the appliance:

1. Lift up the latch on the cover.
2. Place the cover onto the chassis and offset the cover slightly back so that it clears the chassis hooks and lays flush on the appliance chassis (Figure 9 on page 31).
3. Push down the latch to lever the cover into the closed position.
4. Rotate the latch release lock in a clockwise direction to secure the cover.

Figure 9   Removing or Installing the Cover
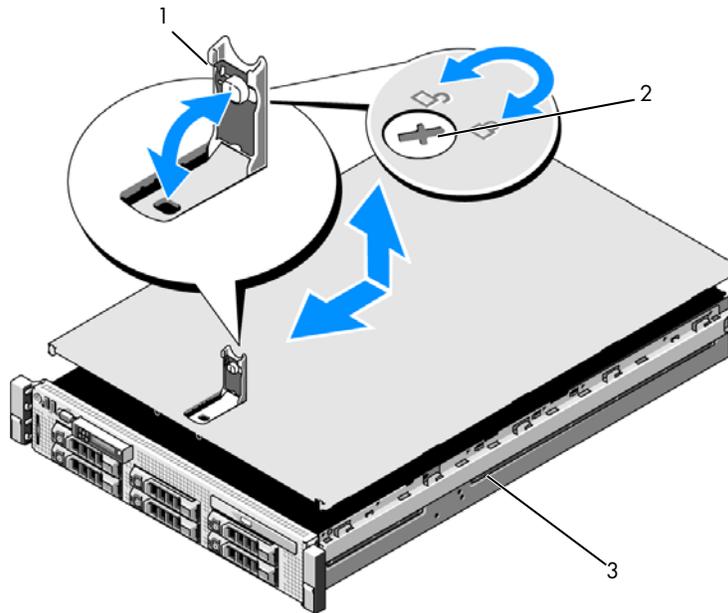
1	latch	2	latch release lock
3	chassis hooks		

Hard Drives

Your appliance has six, hot-swappable, 3.5-inch drive bays.

All drives are installed at the front of the appliance and connect to the appliance board through the SAS backplane. Hard drives are supplied in special hot-swappable hard-drive carriers that fit in the hard-drive bays.

Do not power off or reboot your appliance while the drive is being formatted. Doing so can cause a drive failure.

Figure 10   Installing a Hot-Swap Hard Drive
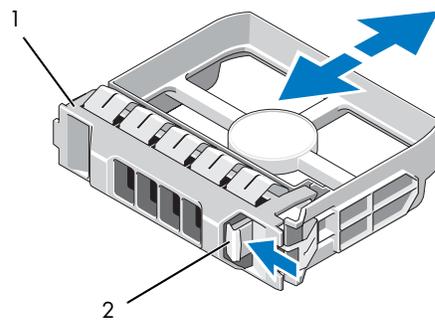
1	3.5-in hard drive blank	2	release latch

Installing a Hard-Drive Blank

Align the hard-drive blank with the drive bay and insert the blank into the drive bay until the release lever clicks into place.

Removing a Hot-Swap Hard Drive

Ensure that your operating appliance supports hot-swap drive removal and installation. See the documentation provided with your operating appliance for more information.

To remove a hot-swap hard drive:

1. If present, remove the front bezel. See Removing the Front Bezel on page 29.
2. Wait until the hard-drive indicators on the drive carrier signal that the drive can be removed safely.

    If the drive has been online, the green activity/fault indicator flashes as the drive powers off. When the drive indicators are off, the drive is ready for removal.

3. Press the button on the front of the drive carrier and open the drive carrier release handle to release the drive (Figure 10).
4. Slide the hard drive out until it is free of the drive bay.

    To maintain proper appliance cooling, all empty hard-drive bays must have drive blanks installed.

5. Insert a drive blank in the vacated drive bay. See Installing a Hard-Drive Blank on page 32.
6. If applicable, install the bezel. See Installing the Front Bezel on page 29.

Installing a Hot-Swap Hard Drive

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

To install a hot-swap hard drive:

1. If present, remove the front bezel. See Removing the Front Bezel on page 29.
2. If a drive blank is present in the bay, remove it.

Figure 11   Installing a Hot-Swap Hard Drive
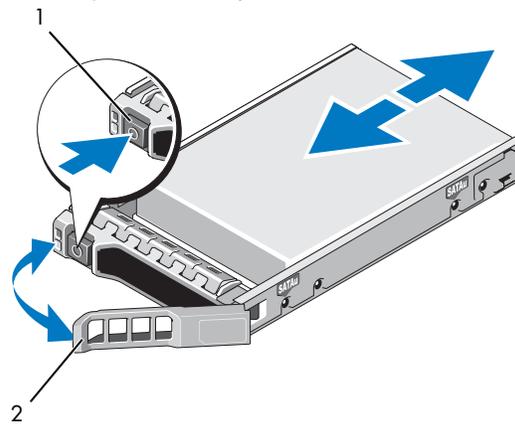
1	release button	2	hard drive carrier handle

3. Install the hot-swap hard drive.

    a. Press the button on the front of the drive carrier and open the handle (Figure 11).

    b. Insert the hard-drive carrier into the drive bay until the carrier contacts the backplane.

    c. Close the handle to lock the drive in place.

4. If applicable, install the bezel. See Installing the Front Bezel on page 29.

Power Supplies

Your appliance supports 870-W High Output power supply modules. The power supply labels specify the maximum power output.

Removing a Power Supply

If troubleshooting a power supply mismatch error, replace *only* the power supply with the flashing indicator. Swapping the opposite power supply to make a matched pair can result in an error condition and unexpected appliance shutdown. To change from a High Output configuration to an Energy Smart configuration or vice versa, you must power down the appliance.

To remove a power supply:

1. On the failed power supply, disconnect the power cable from the power source and the power supply, and remove the cables from the Velcro strap.

2. Press the lever release latch and slide the failed power supply out of the chassis (Figure 12).

Figure 12   Removing and Installing a Power Supply
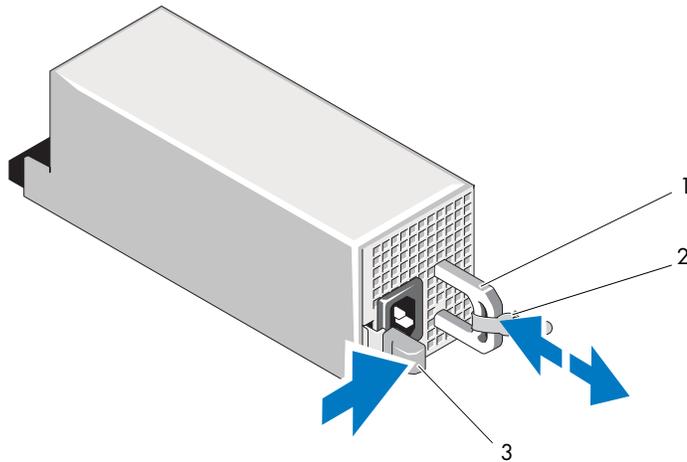
1	power supply handle	2	Velcro strap
3	release latch		

Installing a Power Supply

When installing, hot-swapping, or hot-adding a new power supply, allow several seconds for the appliance to recognize the power supply and determine its status. The power-supply status indicator turns green to signify that the power supply is functioning properly (Figure 5 on page 12).

To install a power supply:

1. On an appliance with redundant power supplies, verify that both power supplies are the same type and have the same maximum output power.

The maximum output power (shown in watts) is listed on the power supply label.

2. Slide the new power supply into the chassis until the power supply is fully seated and the release latch snaps into place (Figure 12).
3. Connect the power cable to the new power supply and plug the cable into a power outlet.
4. Secure the cable with the Velcro strap.

Integrated Remote Access Controller 6 (iRAC6) Enterprise Card

The iRAC6 Enterprise card provides a set of advanced features for managing the server remotely.

Installing an iRAC6 Enterprise Card

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To install an iRAC6 Enterprise Card:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Remove the plastic filler plug for the iRAC6 Enterprise port from the appliance back panel. See Back Panel Features and Indicators on page 10 for the port location.
4. If installed, remove all expansion cards from expansion-card riser 1. See Removing an Expansion Card on page 49.
5. Install the iRAC6 Enterprise card:
    a. Angle the card so that the RJ-45 connector fits through the back-panel opening (Figure 13 on page 36).
    b. Align the front edge of the card with the two front plastic retention standoffs next to the iRAC6 connector on the system-board (Figure 34 on page 85) for the location of the connector.
    c. Press the card down until it is fully seated (Figure 13 on page 36).

       When the front of the card is fully seated, the plastic standoffs snap over the edge of the card.
6. Reinstall all expansion cards in expansion-card riser 1. See Installing an Expansion Card on page 48.
7. Close the appliance. See Closing the Appliance on page 30.
8. Reconnect the appliance and peripherals to their power sources, and power them on.

Figure 13   Removing and Installing the iRAC6 Enterprise Card
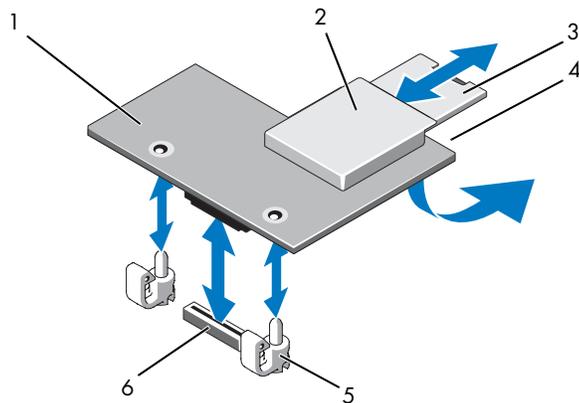
1	iRAC6 Enterprise card	2	VFlash media slot
3	VFlash SD card	4	RJ-45 Ethernet port (underneath card)
5	retention standoff posts (2)	6	iRAC6 Enterprise card connector

Cooling Shroud

The appliance provides a cooling shroud that directs airflow from the cooling fans over the appliance processor(s) and memory module(s).

> Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

> The memory modules are hot to the touch for some time after the appliance has been powered off. Allow the memory modules to cool before handling them.

> Never operate your appliance with the cooling shroud removed. Overheating of the appliance can develop quickly resulting in a shutdown of the appliance and the loss of data.

Removing the Cooling Shroud

To remove the cooling shroud:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Use the lift handles on the cooling shroud to lift the shroud out of the appliance (Figure 14 on page 37).

Figure 14   Removing and Installing the Cooling Shroud
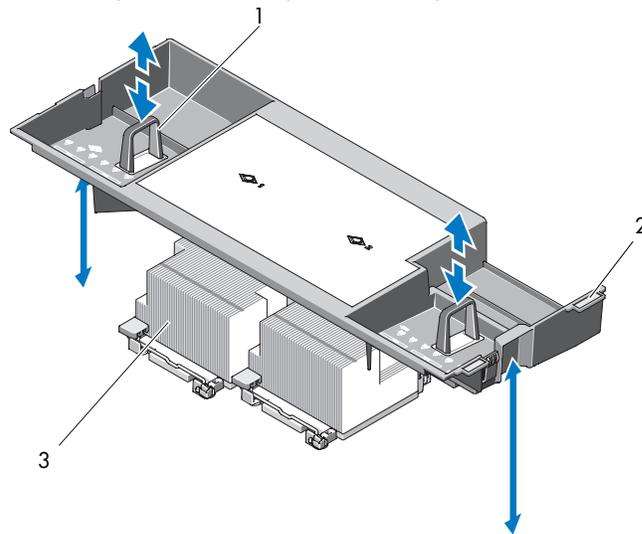
1	lift handles	2	alignment tabs
3	processors		

Installing the Cooling Shroud

To install the cooling shroud:

1. Align the tabs on the right side of the cooling shroud with the cutouts in the right chassis wall.

2. Lower the right end of the shroud into the chassis cutouts and rotate the left end down inside the left chassis wall.

3. Close the appliance. See Closing the Appliance on page 30.

4. Reconnect the appliance to the electrical outlet and power on the appliance and attached peripherals.

Cooling Fans

The RS700 has five hot-swappable fans to provide cooling to the appliance's interior components.

> In the event of a problem with a particular fan, the fan's number is referenced by the system management software, allowing you to easily identify and replace the failed fan.

Removing a Cooling Fan

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

The cooling fans are hot-swappable. To maintain proper cooling while the appliance is on, replace only one fan at a time.

To remove a cooling fan:

1. Open the appliance. See Opening the Appliance on page 30.

Use caution when handling the fan until the fan blades stop spinning.

2. Press the release tab while grasping the ends the fan and lift the fan straight up from the fan bracket (Figure 15).

Figure 15   Removing and Installing a Cooling Fan
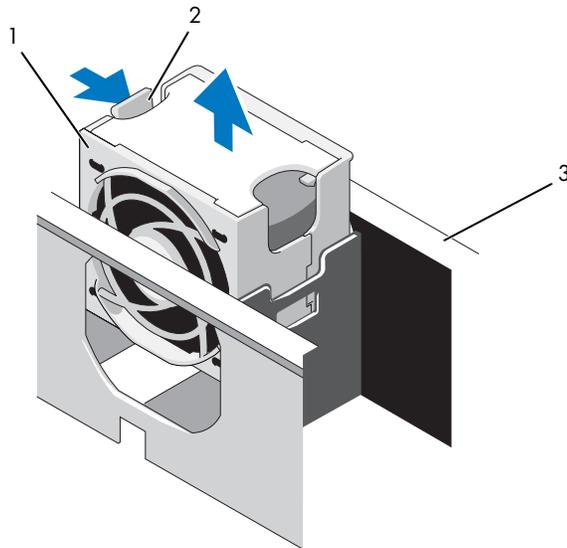
1	fan	2	fan release handle
3	fan bracket		

Installing a Cooling Fan

To install a cooling fan:

1. Align the fan plug with the connector at the base of the fan bracket and lower the fan into the bracket until the fan is fully seated (Figure 16).
2. Close the appliance. See Closing the Appliance on page 30.

Removing the Fan Bracket

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To remove the fan bracket:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. (*Optional*) Remove the fans from the fan bracket. See Removing a Cooling Fan on page 38.
4. Lift the release latches on each end of the fan bracket and lift the bracket out of the appliance (Figure 16 on page 39).

Figure 16   Removing and Installing the Processor Fan Bracket
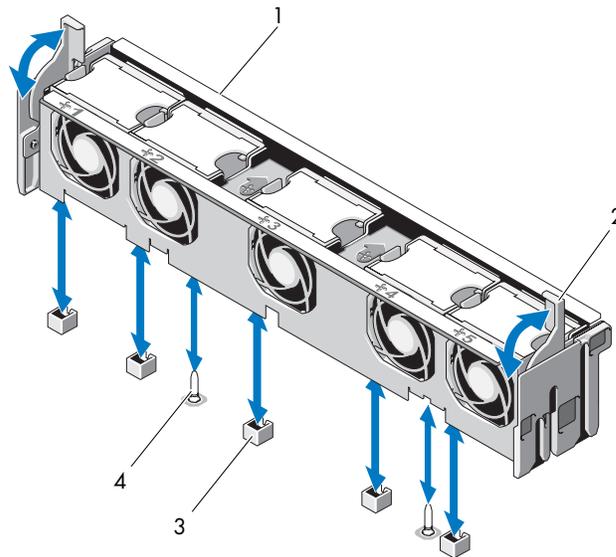
1	fan bracket	2	release latch
3	fan connector on system-board	4	mounting pin

Installing the Fan Bracket

To install the fan bracket:

1. Align the fan bracket down onto the bracket base so that the mounting pins fit correctly into the bracket base (Figure 16 on page 39).
2. Insert the bracket and engage the release levers to lock it in place.
3. If removed, install the fans in the fan bracket. See Installing a Cooling Fan on page 38.
4. Close the appliance. See Closing the Appliance on page 30.

Optical Drive

A slimline DVD-ROM optical drive slides into the front panel and connects to the SATA controller on the system-board. As you face the Mirapoint appliance, the optical drive is on the right side.

DVD devices are data only.

Removing the Optical Drive

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To remove the optical drive:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from its electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Disconnect the optical drive cable from the back of the optical drive.
4. To remove the optical drive, press down on the blue release tab at the back of the optical drive and push the drive out of the appliance (Figure 17 on page 41).

Installing the Optical Drive

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To install the optical drive:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from its electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. To remove the optical drive blank, press down on the blue release tab at the back of the blank and push the blank out of the appliance.
4. Align the optical drive with its opening in the front panel (Figure 17 on page 41).
5. Slide in the optical drive until the latch snaps into place.
6. Connect the optical drive cable to the back of the drive tray.
7. If not already done, connect the power and interface cables from the optical drive to the system-board connectors.

   a. Connect the power cable to the DVD/TBU_PWR connector on the front of the system-board below the fan bracket. See Figure 34 on page 85 for the location of the connector.

    b.   Route the interface cable along the inside right wall of the chassis. See Cable Routing on page 46 or Figure 18 on page 42 for the 3.5-inch backplane chassis.

    c.   Connect the cable to the SATA_A connector on the system-board.See Figure 34 on page 85 for the location of the connector.

8. Close the appliance. See Closing the Appliance on page 30.

9. Install the bezel. See Installing the Front Bezel on page 29.

10. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

Figure 17   Removing and Installing the Optical Drive
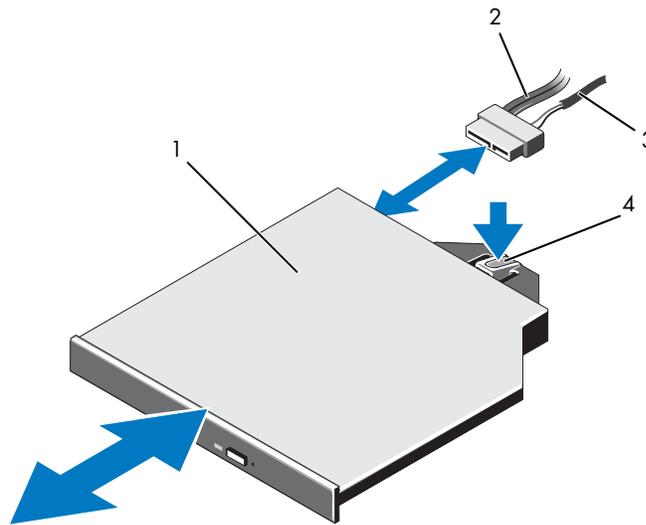
1	optical drive	2	optical-drive interface cable
3	power cable	4	optical-drive release tab

Figure 18   Routing the Optical Drive Cable (3.5-inch Hard-Drive Chassis)
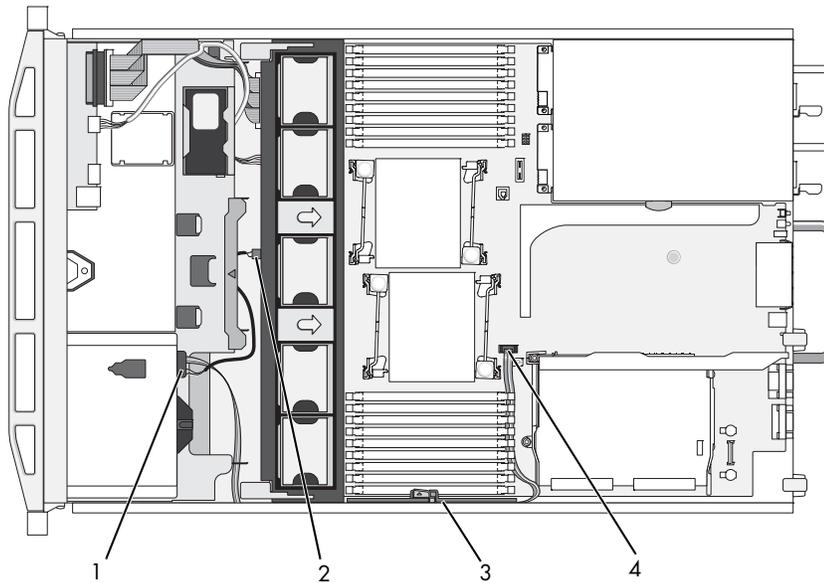
1	optical drive connector	2	DVD/TBU_PWR connector
3	cable retention bracket	4	SATA_A connector

Integrated Storage Controller Card

Your appliance includes a dedicated expansion-card slot on riser 1 for an integrated storage controller card that provides the storage subsystem for your appliance's internal hard drives. The controller supports SAS and SATA hard drives and also enables you to set up the hard drives in RAID configurations as supported by the version of the storage controller included with your appliance.

## Removing the Integrated Storage Controller Card

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To remove the integrated storage controller card:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Remove all expansion cards from expansion-card riser 1. See Removing an Expansion Card on page 49.
4. Disconnect the SAS cable(s) from the storage controller card.

⚠️ Disconnecting the RAID battery cable from a RAID card can cause data loss if the dirty cache LED on the card is lit. The LED indicates that data is still cached in controller memory and the data was not cleared at appliance shutdown.

5. If necessary, disconnect the RAID battery cable from the controller.
6. Bend both card-edge guides outward and pull the storage controller card out of the connector (Figure 19 on page 43).
7. Bend outward on both card-edge guides to release the controller, lift the side of the controller that is adjacent to the blue guide, and then remove the controller out towards the rear of the chassis (Figure 19 on page 43).

Installing the Integrated Storage Controller Card

To install the integrated storage controller card:

1. With the storage controller card-edge facing the riser, insert one side of the card into the black card-edge guide.
2. Bend outward on the blue card-edge guide, lower the card onto the blue card-edge guide, and release the guide (Figure 19 on page 43).

Figure 19   Installing a Storage Controller Card
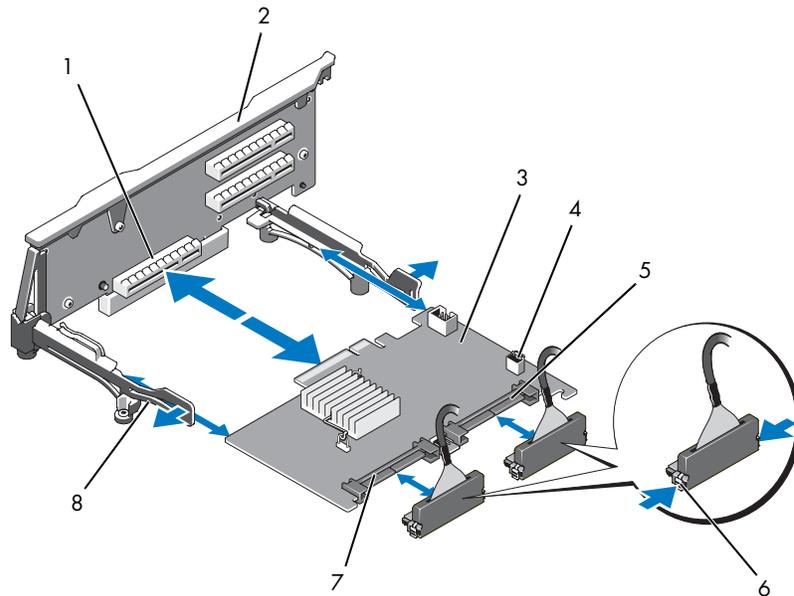
1	dedicated storage controller card connector	2	riser 1
3	integrated storage controller card	4	RAID battery connector
5	SAS_1 connector	6	connector locking tabs
7	SAS_0 connector	8	card edge guides (2)

3. Slide the storage controller's card edge connector into the card slot on the riser until the card is fully seated (Figure 19).

4. Connect the SAS_0 cable to the storage controller's SAS_0 connector, and connect the SAS_1 cable to the controller's SAS_1 connector.

> ⚠ Be sure to connect the cable according to the connector labels on the cable. The cables are not operational if reversed.

5. For a battery-cached RAID controller, install the RAID battery. See Installing a RAID Battery on page 45.

6. If not already done, route the interface and RAID battery cables in the cable path inside the right interior wall of the chassis beneath the cable retention bracket. See Cable Routing on page 46 and Figure 20.

7. Connect the SAS A cable to the SAS A connector on the backplane and, if applicable, connect the SAS B cable to the SAS B connector on the backplane.

8. Close the appliance. See Closing the Appliance on page 30.

9. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

Figure 20 Storage Controller Card Cabling (Six 3.5-in Hard-Drive Chassis)
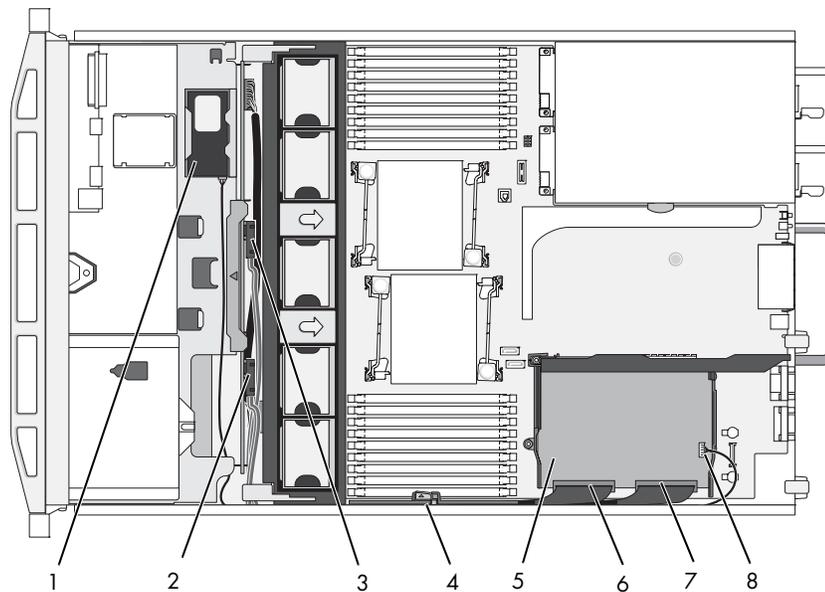
1	RAID battery	2	SAS B connector on backplane
3	SAS A connector on backplane	4	cable retention bracket
5	integrated storage controller card	6	SAS_0 connector
7	SAS_1 connector	8	RAID battery connector

RAID Battery

Use the following procedures to replace a failed RAID controller card battery.

Removing a RAID Battery

To remove a RAID battery:

1. Pull back gently on the right edge of the battery bay and draw out the RAID battery from the battery carrier.
2. Disconnect the cable between the RAID battery and the storage controller card (Figure 21).

Installing a RAID Battery

To install a RAID battery:

1. Connect the battery cable to the connector on the battery.
2. Locate the battery bay on top of the hard drive bays (Figure 7 on page 28).
3. With the cable oriented toward the back, angle the left side of the RAID battery into the left side of the battery bay (Figure 21 on page 45).
4. Rotate the right side of the battery down and press into the locked position.
5. If not already done, route the battery cable through the right chassis wall. See Cable Routing.
6. Connect the battery cable to the battery connector on the storage controller (Figure 19 on page 43).

Figure 21   Removing or Installing a RAID Battery
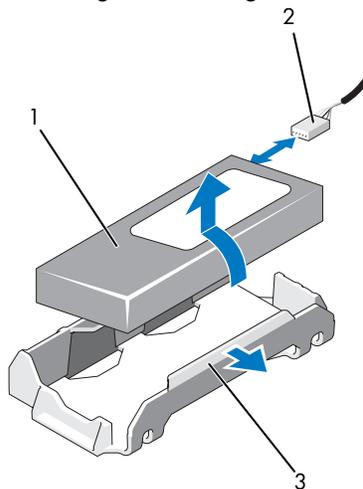
1	RAID battery	2	RAID battery cable from storage controller
3	battery bay		

Cable Routing

Cables that extend through the appliance front-to-back are routed along a cable path within the interior right wall of the appliance chassis. The cables are secured by a cable retention bracket that attaches to the inner wall.

Removing the Cable Retention Bracket

To remove the cable retention bracket:

1. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.
2. Remove the cooling fan bracket. See Removing the Fan Bracket on page 39.
3. Press outward on the blue release latch on the cable retention bracket and slide the bracket back until the tabs at the bottom of the bracket clear the chassis (Figure 22).
4. Lift the cable retention bracket off the chassis wall.

Figure 22   Removing and Installing the Cable Retention Bracket
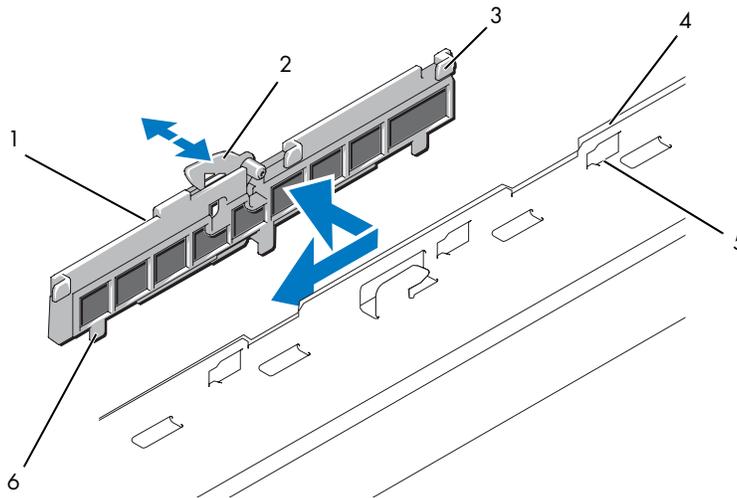
1	cable retention bracket	2	release latch
3	hooks (3)	4	right chassis wall
5	chassis slots (6)	6	tab (3)

Installing the Cable Retention Bracket

To install the cable retention bracket:

1. Insert the hooks and tabs of the cable retention bracket into the slots in the chassis wall and slide the bracket back until the latch engages.
2. Install the cooling fan bracket. See Installing the Fan Bracket on page 39.
3. Install the cooling shroud. See Installing the Cooling Shroud on page 37.

Expansion Cards and Expansion-Card Risers

The appliance supports up to four PCI Express (PCIe) expansion cards on two expansion-card risers.

◆ Expansion-card riser 1 provides two PCIe x4-link Gen 2 expansion slots.

◆ Expansion-card riser 2 provides two PCIe x8-link Gen 2 expansion slots.

> Expansion cards can only be plugged into the slots on the expansion-card risers. Do not plug any expansion cards into the riser connectors on the system-board.

To identify expansion slots, see Expansion Cards and Expansion-Card Risers on page 47.

Expansion Card Installation Guidelines

Observe the following notes and guidelines regarding the expansion-card slots:

◆ PCI Express Generation 2 and Generation 1 expansion cards are supported in all slots.

◆ In slots 2, 3, and 4, expansion cards can have a maximum length of 24.13 cm (9.5 in). Slot 1 supports a full-length (30.99-cm [12.2-in]) expansion card.

◆ The appliance supports three full-height expansion cards and one low-profile expansion card (slot 2).

◆ Although slots 1 and 2 are physically PCIe x8 connectors, they function only as PCIe x4-link slots.

◆ The expansion-card slots are not hot-swappable.

◆ Besides the integrated storage controller, the appliance supports a maximum of two RAID controller expansion cards to manage external storage.

> To ensure proper cooling no more than two of the four expansion cards can have a power consumption of greater than 15W (up to 25W maximum each), not including the integrated storage controller.

◆ Table 5 provides a guide for installing expansion cards to ensure proper cooling and mechanical fit. The expansion cards with the highest priority should be installed first using the slot priority indicated. All other expansion cards should be installed in card priority and slot priority order.

Table 5   Expansion-Card Installation Order

Card Priority	Card Type	Slot Priority	Max Allowed	Greater Than 15W?
1	PERC 5/E controller	1,3,4	2	Y

Table 5   Expansion-Card Installation Order (Continued)

Card Priority	Card Type	Slot Priority	Max Allowed	Greater Than 15W?
2	PERC 6/E controller	3,4,1	2	Y
3	10 Gb NIC	3,4,1,2	2	Y
4	All other Dell cards	3,4,1	2	Y
5	All other NICs	1,2,3,4	4[1]	N[2]
6	Non-Dell storage cards	1,2,3,4	4[1]	N[2]

[1]Maximum of 2 of any card whose maximum power exceeds 15W.
[2]Refer to the expansion card documentation to ensure that the maximum power does not exceed 15W.

Installing an Expansion Card

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

Before installing any expansion cards, see Expansion Card Installation Guidelines on page 47.

The procedure for installing expansion cards into risers 1 and 2 is the same except that slots 3 and 4 on riser 2 have card-edge guides for installing 24.13-cm (9.5-in) expansion cards.

To install an expansion card:

1. Unpack the expansion card and prepare it for installation.
2. For instructions, see the documentation accompanying the card.
3. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
4. Open the appliance. See Opening the Appliance on page 30.
5. Open the expansion-card guide latch and remove the filler bracket at the back of the appliance (Figure 23 on page 50).

Keep this bracket in case you need to remove the expansion card. Filler brackets must be installed over empty expansion-card slots to maintain FCC certification of the appliance. The brackets also keep dust and dirt out of the appliance and aid in proper cooling and airflow inside the appliance.

6. Install the expansion card:

   a. If the expansion card is 24.13 cm (9.5 in), align its front edge with the front card guide (Figure 23 on page 50).

   b. Position the expansion card so that the card-edge connector aligns with the expansion-card connector on the expansion-card riser board.

   c. Insert the card-edge connector firmly into the PCIe card connector until the card is fully seated.

   d. When the card is seated in the connector, close the expansion-card latch (Figure 23 on page 50).

7. Connect any expansion-card cables for the new card.

   See the documentation that came with the card for information about its cable connections.

8. Close the appliance. See Closing the Appliance on page 30.

9. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

Removing an Expansion Card

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To remove an expansion card:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.

2. Open the appliance. See Opening the Appliance on page 30.

3. Disconnect any cables connected to the expansion card.

4. Remove the expansion card:

   a. Open the expansion-card latch at the back of the appliance chassis (Figure 23 on page 50).

   b. Grasp the expansion card by its top corners, and carefully pull the card from the expansion-card connector.

5. If you are removing the card permanently, install a metal filler bracket over the empty expansion slot opening and close the expansion-card latch.

You must install a filler bracket over an empty expansion slot to maintain Federal Communications Commission (FCC) certification of the appliance. The brackets also aid in proper cooling and airflow inside the appliance.

6. Close the appliance. See Closing the Appliance on page 30.

7. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

Figure 23   Removing or Installing an Expansion Card
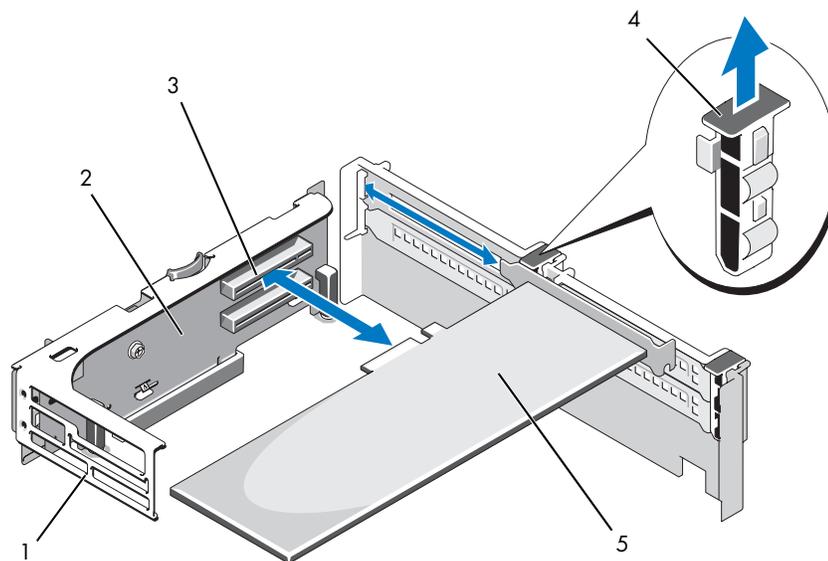
1	front card guide	2	expansion-card riser 2
3	expansion-card connector	4	expansion-card guide latch
5	expansion card		

Removing Expansion-Card Riser 1

> Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

> You must remove all expansion cards from the expansion-card riser before removing the riser from the appliance.

> The appliance does not start with a riser board removed.

To remove expansion-card riser 1:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Disconnect all cables connected to the expansion card.
4. Remove all expansion cards from the expansion-card riser. See Removing an Expansion Card on page 49.
5. Press the tab at the bottom of the riser to release the board from the card slot and lift expansion-card riser 1 off of the mounting pins and out of the appliance (Figure 24 on page 51).

Installing Expansion-Card Riser 1

> ⚠ The appliance does not start with a riser board removed.

To install the expansion-card riser 1:

1. Aligning the pin collar over the mounting pin on the appliance board, lower expansion-card riser 1 until the board connector is firmly seated into the appliance board socket (Figure 24).

2. Reinstall any expansion cards. See Installing an Expansion Card on page 48.

3. Reconnect all expansion-card cables.

4. Close the appliance. See Closing the Appliance on page 30.

5. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

Figure 24   Removing and Installing Expansion-Card Riser 1
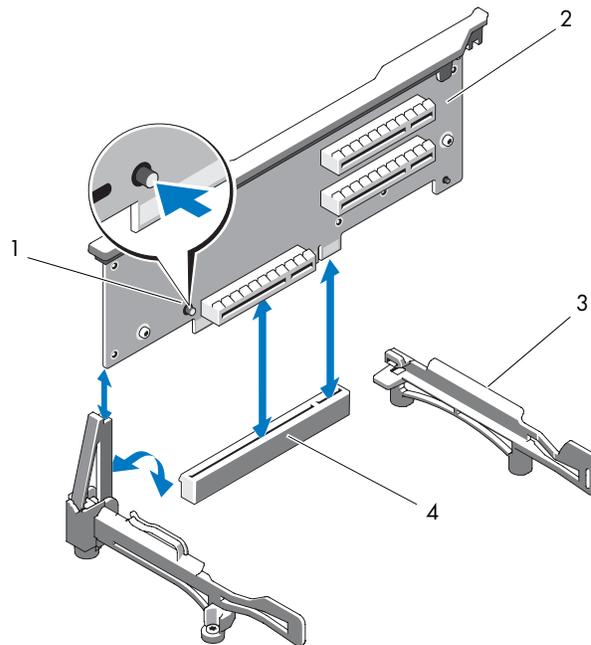
1	release button	2	expansion-card riser 1
3	card edge guides	4	appliance board socket

Removing Expansion-Card Riser 2

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

You must remove all expansion cards from the expansion-card riser before removing the riser from the appliance.

The appliance does not start with a riser board removed.

To remove expansion-card riser 2:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Disconnect all cables connected to the expansion card.
4. Remove any expansion cards from the expansion-card riser. See Removing an Expansion Card on page 49.
5. Press the blue release latch on expansion-card riser 2 and lift the riser straight up to clear the chassis (Figure 25 on page 53).

Installing Expansion-Card Riser 2

To install expansion-card riser 2:

1. Align the guides on each end of expansion-card riser 2 with the mounting pins on the appliance board, and lower the riser into the appliance until the latches on the riser the engage (Figure 25 on page 53).
2. Reinstall any expansion cards. See Installing an Expansion Card on page 48.
3. Reconnect all expansion-card cables.
4. Close the appliance. See Closing the Appliance on page 30.
5. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

Figure 25   Removing and Installing Expansion-Card Riser 2

1	expansion-card riser 2	2	release latch
3	pin collars (2)	4	mounting pins (2)
5	riser 2 connector on appliance board		

Removing Expansion-Card Riser 2 From the Expansion-Card Bracket

To remove expansion-card riser 2 from the expansion-card bracket:

1. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Remove any expansion cards from the expansion-card riser 2. See Removing an Expansion Card on page 49.
4. Remove expansion-card riser 2. See Removing Expansion-Card Riser 2 on page 52.

Figure 26   Removing and Installing the Riser 2 Board
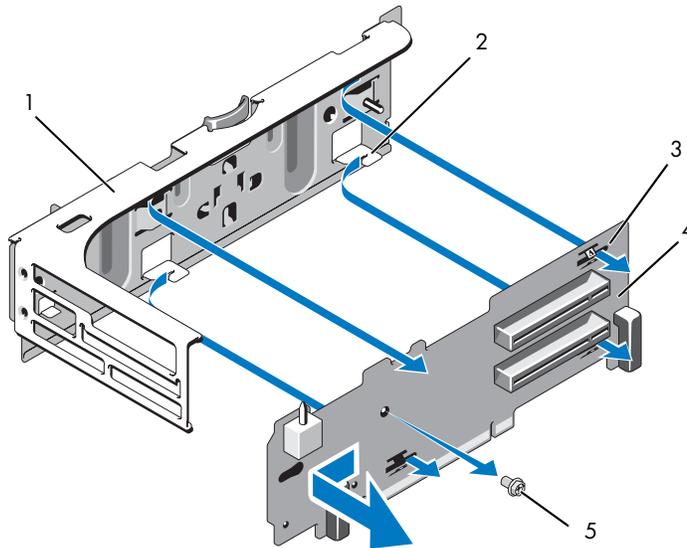
1	expansion-card bracket	2	tab hook (4)
3	tab slot (4)	4	riser 2 board
5	screw		

5. Remove the expansion-card riser board:

   a. Using a Phillips screwdriver, remove the securing screw from the assembly (Figure 26).

   b. Slide the riser board off of the four securing tab hooks.

   c. Lift the riser board from the bracket.

Installing the Riser 2 Board on the Expansion-Card Bracket

To install the riser 2 board on the expansion-card bracket:

1. Place the riser board in the expansion-card bracket so that the four tab hooks are fully inserted through the tab slots on the riser board (Figure 26).

2. Slide the riser board into the tab hooks.

3. Using a Phillips screwdriver, secure the board with the Phillips screw.

4. Reinstall expansion-card riser 2. See Installing Expansion-Card Riser 2 on page 52.

5. Install all expansion cards in the expansion-card slots. See Installing an Expansion Card on page 48.

6. Close the appliance. See Closing the Appliance on page 30.

7. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

Memory

Your appliance supports DDR3 ECC unbuffered DIMMs (UDIMMs).

The appliance contains 18 memory sockets split into two sets of nine sockets, one set for each processor. Each nine-socket set is organized into three channels of three memory sockets per channel. The first socket of each channel is marked with white release levers.

Removing Memory Modules

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

The memory modules are hot to the touch for some time after the appliance has been powered down. Allow time for the memory modules to cool before handling them. Handle the memory modules by the card edges and avoid touching the components on the memory module.
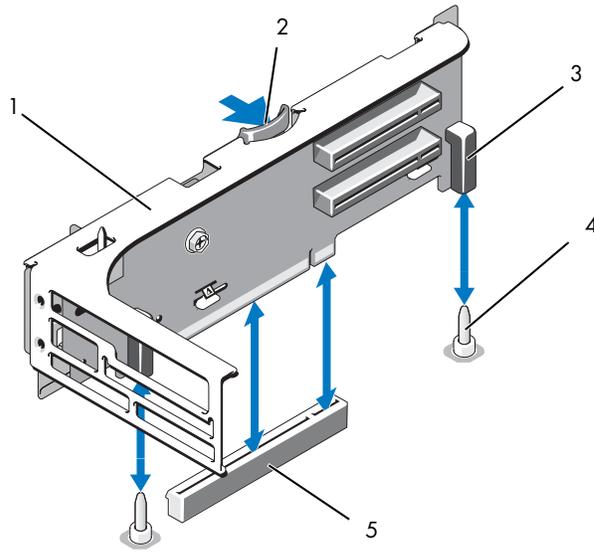
To remove memory modules:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.
4. Locate the memory module sockets (Figure 34 on page 93).
5. Press down and out on the ejectors on each end of the socket until the memory module pops out of the socket (Figure 27).

Figure 27   Removing and Installing a Memory Module
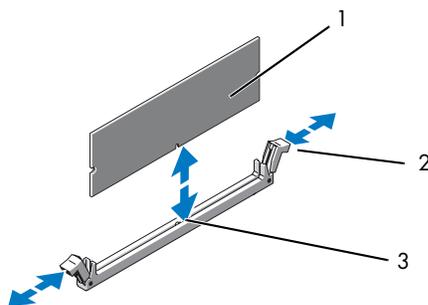
1	memory module	2	memory module socket ejectors (2)
3	alignment key		

Handle each memory module only by the card edges, ensuring not to touch the components on the module.

6. Reinstall the cooling shroud.

7. Close the appliance. See Closing the Appliance on page 30.

8. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

Installing Memory Modules

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

The memory modules are hot to the touch for some time after the appliance has been powered down. Allow time for the memory modules to cool before handling them. Handle the memory modules by the card edges and avoid touching the components on the memory module.

To install memory modules:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.

2. Open the appliance. See Opening the Appliance on page 30.

3. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.

4. Locate the memory module sockets (Figure 34 on page 93).

5. Press outward on the memory module ejectors to allow the memory module to be inserted into the socket (Figure 27 on page 55).

Handle each memory module only by the card edges, ensuring not to touch the components on the module.

6. Align the memory module's edge connector with the alignment key of the memory module socket, and insert the memory module in the socket.

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

7. Press down on the memory module with your thumbs until the ejectors lock into position (Figure 27 on page 55).

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

8. Repeat Steps 5 through 7 of this procedure to install the remaining memory modules (Table 5 on page 47).

9. Install the cooling shroud. See Installing the Cooling Shroud on page 37.

10. Close the appliance. See Closing the Appliance on page 30.

11. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

Processors

Removing a Processor

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To remove a processor:

1. Prior to upgrading your appliance, download the latest appliance BIOS version to install the update on your appliance. For use, contact your Mirapoint representative.

2. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.

3. Open the appliance. See Opening the Appliance on page 30.

4. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.

The heat sink and processor are hot to the touch for some time after the appliance has been powered down. Allow the heat sink and processor to cool before handling them.

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

5. Release one of the heat-sink release levers (Figure 28 on page 58).

6. Wait 30 seconds for the heat sink to loosen from the processor.

7. Release the other heat-sink release lever.

8. Gently lift the heat sink off of the processor and set the heat sink aside upside down (thermal grease side facing up).

Figure 28   Installing and Removing the Heat Sink
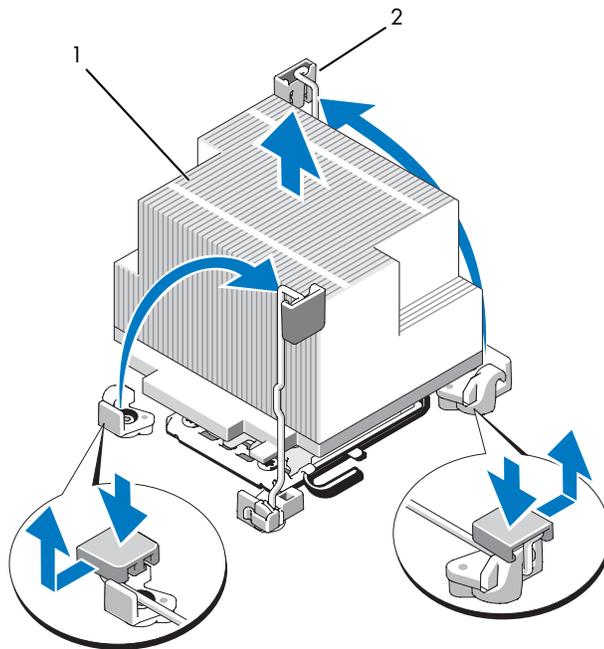
| 1 | heat sink | 2 | release lever (2) |

The processor is held in its socket under strong pressure. Be aware that the release lever can spring up suddenly if not firmly grasped.

9. Position your thumb firmly over the processor socket-release lever and release the lever from the locked position. Rotate the lever 90 degrees upward until the processor is released from the socket (Figure 29).

10. Rotate the processor shield upward and out of the way (Figure 29).

Figure 29   Installing and Removing a Processor
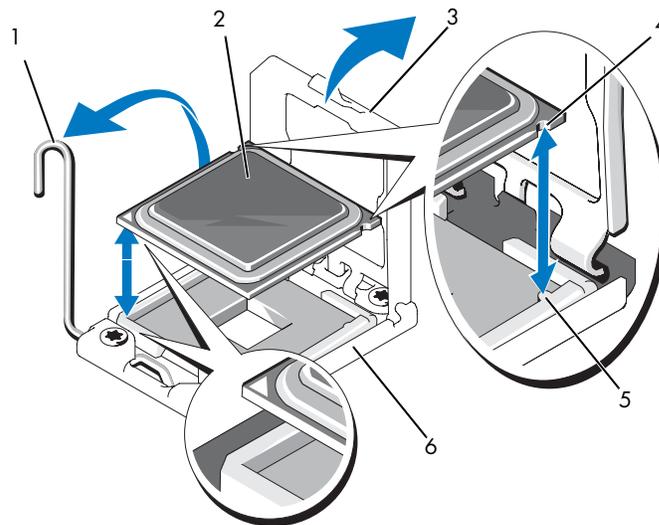
1	socket-release lever	2	processor
3	processor shield	4	notch in processor (2)
5	socket key (2)	6	ZIF socket

Be careful not to bend any of the pins on the ZIF socket when removing the processor. Bending the pins can permanently damage the appliance board.

11. Lift the processor out of the socket and leave the release lever up so that the socket is ready for the new processor.

If you are permanently removing the processor, you must install a processor blank and a heat-sink blank in the CPU2 socket to ensure proper appliance cooling. Adding the blanks is similar to installing a processor. See Installing a Processor.

Installing a Processor

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

In a single-processor configuration, the CPU1 socket must be used.

To install a processor:

1. If you are adding a second processor for the first time, remove the heat-sink blank and the processor blank from the vacant processor socket. Removing the blanks is similar to removing a processor. See Removing a Processor.

2. Unpack the new processor.

3. Align the processor with the socket keys on the ZIF socket (Figure 29).

4. Install the processor in the socket.

> Positioning the processor incorrectly can permanently damage the appliance board or the processor. Be careful not to bend the pins in the socket.

   a. With the release lever on the processor socket in the open position, align the processor with the socket keys and set the processor lightly in the socket.

   > Do not use force to seat the processor. When the processor is positioned correctly, it engages easily into the socket.

   b. Close the processor shield.

   c. Rotate the socket release lever down until it snaps into place.

5. Install the heat sink.

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

   > Applying too much thermal grease can result in excess grease coming in contact with and contaminating the processor socket.

   b. Open the grease packet included with your processor kit and apply a spot of thermal grease equal to the size of a finger nail to the top center of the new processor.

   c. Place the heat sink on the processor (Figure 28 on page 58).

   d. Close the heat-sink release levers (Figure 28 on page 58).

6. Install the cooling shroud. See Installing the Cooling Shroud on page 37.

7. Close the appliance. See Closing the Appliance on page 30.

8. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

System Battery

Removing the System Battery

> Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

> There is a danger of a new battery exploding if it is incorrectly installed. Replace the battery only with the same or equivalent type recommended by the manufacturer. See your safety information for additional info.

To remove the system battery:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Remove the fan bracket. See Removing the Fan Bracket on page 39.
4. Locate the battery socket. See System-Board Connectors on page 85.

> To avoid damage to the battery connector, you must firmly support the connector while installing or removing a battery.

5. Remove the system battery.

    a. Support the battery connector by pressing down firmly on the positive side of the connector.
    b. Press the battery toward the positive side of the connector and lift it up out of the securing tabs at the negative side of the connector (Figure 30).

Figure 30   Installing the System Battery
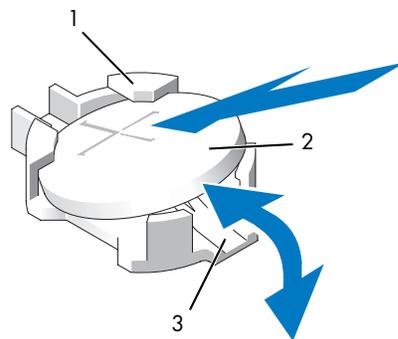
1	positive side of battery connector	2	system battery
3	negative side of battery connector		

Installing the System Battery

To install the system battery:

1. Support the battery connector by pressing down firmly on the positive side of the connector.
2. Hold the battery with the + facing up, and slide it under the securing tabs at the positive side of the connector (Figure 30).
3. Press the battery straight down into the connector until it snaps into place.
4. Install the fan bracket. See Installing the Fan Bracket on page 39.
5. Close the appliance. See Closing the Appliance on page 30.
6. Reconnect the appliance to the electrical outlet and power the appliance on, including any attached peripherals.

Control Panel Assembly (Service-only Procedure)

The control panel assembly consists of two separate modules—the display module and the control panel circuit board. Use the following instructions to remove and install either module.

Removing the Control Panel Display Module

⚠️ Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To remove the control panel display module:

1. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet and peripherals.
2. Open the appliance. See Opening the Appliance on page 30.
3. Disconnect the display module cable from the control panel board (Figure 31 on page 63).
4. Using a knife or a small flat-blade screwdriver, insert the blade beneath the front panel of the display and slide the blade across the bottom to lift the panel outward (Figure 31 on page 63).
5. Bend the panel upward to allow access to the mounting screws.
6. Using a T10 Torx driver, remove the two screws that secure the display module to the appliance chassis.
7. Remove the display module from the chassis cutout.

Installing the Control Panel Display Module

To install the control panel display module:

1. Insert the display module into the chassis cutout and secure with the two Torx screws (Figure 31 on page 63).
2. Attach the replacement panel to the front of the display module.
3. Connect the display module cable to the control panel board.
4. Close the appliance. See Closing the Appliance on page 30.
5. Reconnect the appliance to the power source and power on the appliance and attached peripherals.

Figure 31 Removing and Installing the Control Panel

1	front panel screw (Torx)	2	display module cable
3	control panel board	4	control panel cable
5	mounting screws (3 Torx)	6	display module

Removing the Control Panel Board

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To remove the control panel board:

1. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet and peripherals.

2. Open the appliance. See Opening the Appliance on page 30.

3. Disconnect the display module cable from the control panel board (Figure 31 on page 63).

4. Disconnect the control panel cable at back of the control panel board (Figure 31 on page 63).

5. Disconnect the internal SD module cable.

6. Using a T8 Torx driver, remove the screw on the front panel located beneath the left USB connector (Figure 31 on page 63).

7. Using a T10 Torx driver, remove the three screws that secure the control panel board to the appliance chassis and remove the board.

Installing the Control Panel Board

To install the control panel board:

1. Install the front panel screw in the screw hole located beneath the left USB connector (Figure 31 on page 63).
2. Install the control panel board in the appliance chassis and secure with the three Torx screws (Figure 31 on page 63).
3. Connect the display module cable to the control panel board.
4. Connect the control panel cable to the control panel board.
5. Connect the internal SD module cable.
6. Close the appliance. See Closing the Appliance on page 30.
7. Reconnect the appliance to the power source and power on the appliance and attached peripherals.

SAS Backplane (Service-Only Procedure)

Removing the SAS Backplane

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To remove the SAS backplane:

1. If applicable, remove the bezel. See Removing the Front Bezel on page 29.
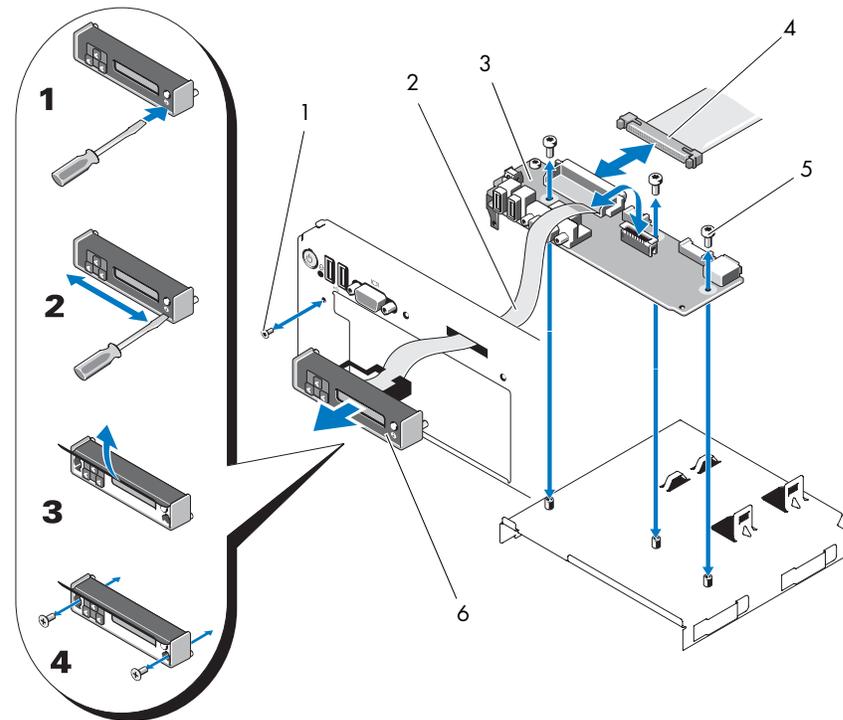2. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.
3. Open the appliance. See Opening the Appliance on page 30.

To prevent damage to the drives and backplane, you must remove the SAS drives from the appliance before removing the backplane.

You must note the number of each hard drive and temporarily label them before removal to ensure that you can install them in the same locations.

4. Remove all hard drives. See Removing a Hot-Swap Hard Drive on page 32.
5. Disconnect the power cable from the end of the SAS backplane.
6. Disconnect the SAS data cables from the backplane.
7. Remove the SAS backplane from the appliance:

    a. While pulling the blue latch toward the front of the appliance, slide the backplane upward. See Removing the SAS Backplane on page 64.

    b. When the backplane cannot slide upward any farther, pull the backplane toward the back of the appliance to remove it from the retention hooks.

    c. Lift the board out of the appliance, being careful to avoid damaging components on the face of the board.

    d. Place the SAS backplane face down on a work surface.

Installing a SAS Backplane

To install a SAS backplane:

1. Install the SAS backplane:

    a. Lower the backplane into the appliance, being careful to avoid damaging components on the face of the board.

    b. Align the slots in the backplane with the retention hooks on the back of the drive bays, then move the backplane forward until the retention hooks fit through the slots in the backplane.

2. Slide the backplane downward until the blue retention latch locks into place.

3. Connect the SAS data and power cables to the SAS backplane.

4. Install the hard drives in their original locations.

5. Close the appliance. See Closing the Appliance on page 30.

6. Reconnect the appliance to its electrical outlet and power the appliance on, including any attached peripherals.

System-Board (Service-Only Procedure)

Removing the System-Board

> Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

> If your appliance uses the Trusted Platform Module (TPM) with an encryption program, you must supply the recovery key for your data before you can access the encrypted data on your hard drives. See the documentation for your encryption software for more information.

> After installing the system-board, you are required to update the Unified Server Configurator repository to the latest software to restore full functionality. See the Unified Server Configurator user documentation for more information.

To remove the system-board:

1. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.

2. Open the appliance. See Opening the Appliance on page 30.

3. Remove the power supplies. See Removing a Power Supply on page 33.

4. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.

5. Remove all expansion cards and the integrated storage controller card. See Removing an Expansion Card on page 49 and Removing the Integrated Storage Controller Card on page 42.

6. If installed, remove the NIC hardware key from the system-board. See Cooling Shroud on page 36.

7. Remove the two riser boards. See Removing Expansion-Card Riser 1 on page 50 and Removing Expansion-Card Riser 2 on page 52.

8. Remove the fan bracket. See Removing the Fan Bracket on page 39.

9. *Six 3.5-inch hard-drive chassis only:* Remove the SAS backplane. See Removing the SAS Backplane on page 64.

> To prevent damage to the drives and backplane, you must remove the SAS drives from the appliance before removing the backplane.

> Note the number of each hard drive and temporarily label them before removal to ensure that you can install them in the same locations.

   a. Remove all hard drives. See Removing a Hot-Swap Hard Drive on page 32.

   b. Disconnect the power and interface cables from the SAS backplane.

   c. Pull the blue latch toward the front of the appliance and slide the backplane upward.

   d. When the backplane cannot slide upward any farther, pull the backplane toward the back of the appliance to remove it from the retention hooks.

   e. Lift the board out of the appliance, being careful to avoid damaging components on the face of the system-board.

   f. Place the SAS backplane face down on a work surface.

10. Disconnect all cables from the system-board.

11. Remove the system-board assembly:

   a. Pull up the spring-loaded blue retention pin located in the center of the system-board, and then slide the system-board assembly toward the front end of the chassis.

> Do not lift the system-board by the memory modules latches, processor heatsink, or any component on the system-board.

   b. Grasp the system-board assembly by the edges of the system-board tray, and lift the assembly from the chassis (Figure 32).

Figure 32   System-Board Removal
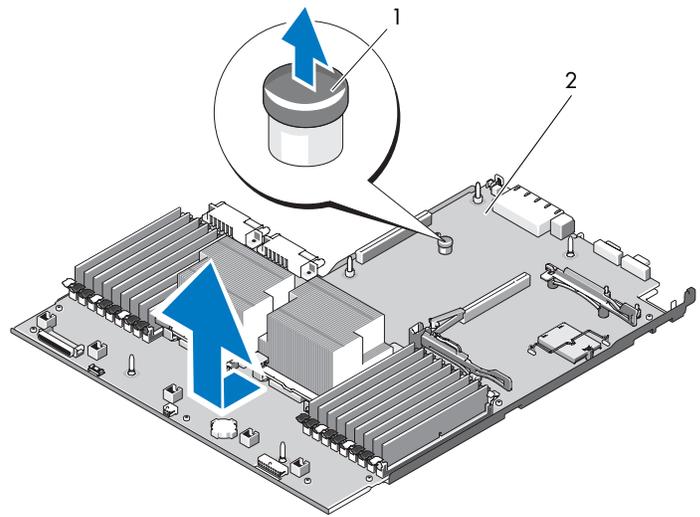
1	system-board tray riser release pin	2	system-board

Installing the System-Board

To install the system-board:

1. Unpack the new system-board and remove the label placard that is inserted in the memory module socket.

2. Remove the labels from the placard and affix them to the information tag on the front of the appliance (Figure 1 on page 13).

3. Transfer the processors and heat sinks to the new system-board. See Removing a Processor.

4. Remove the memory modules and transfer them to the same locations on the new board. See Processors on page 57 and Installing Memory Modules on page 56.

5. Install the new system-board:

    a. Angle the system-board as you lower it into the chassis and set the system-board flat inside the chassis.

    b. Maneuver the system-board so that all of the retention hooks on the chassis are inserted into the retention slots on the system-board.

    c. Push the system-board toward the back of the chassis until the blue retention pin locks into place.

6. If applicable, transfer the NIC hardware key.

7. Install the riser boards. See Installing Expansion-Card Riser 1 on page 51 and Installing Expansion-Card Riser 2 on page 52.

8. Reinstall the integrated storage controller card. See Installing the Integrated Storage Controller Card on page 43.

9. If applicable, reconnect the RAID battery cable to the storage controller card.

10. Reconnect all power and interface cables (see Figure 34 on page 93 for the locations of the connectors on the system-board).

11. If removed, reinstall the SAS backplane and all hard drives. See System-Board (Service-Only Procedure) on page 65.

12. Install all expansion cards. See Installing an Expansion Card on page 48.

13. If applicable, transfer the iRAC6 Enterprise card to the new system-board. See Installing an iRAC6 Enterprise Card on page 35.

14. Install the fan bracket. See Installing the Fan Bracket on page 39.

15. Install the cooling shroud. See Installing the Cooling Shroud on page 37.

16. Close the appliance. See Closing the Appliance on page 30.

17. Reconnect the appliance to its electrical outlet and power the appliance on, including any attached peripherals.

Troubleshooting Your Appliance

This chapter describes potential component failures and provides replacement procedures. Topics include:

Safety First—For You and Your Appliance

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin any procedures, review the safety instructions provided with the appliance.

Troubleshooting Appliance Startup Failure

If your appliance halts during startup prior to video imaging or LCD messaging, especially after installing an operating system or reconfiguring your appliance's hardware, check for the following conditions.

◆ Invalid memory configurations could cause the appliance to halt at startup without any video output. See Memory on page 55.

◆ For all other startup issues, note the LCD panel messages and any system messages that appear on-screen. See LCD Status Messages on page 12 and System Messages on page 24 for more information.

Troubleshooting External Connections

Ensure that all external cables are securely attached to the external connectors on your appliance before troubleshooting any external devices. See Figure 1 on page 6 and Figure 4 on page 10 for the front- and back-panel connectors on your appliance.

Troubleshooting the Video Subsystem

To troubleshoot the video subsystem:

1. Check the appliance and power connections to the monitor.
2. Check the video interface cabling from the appliance to the monitor.
3. If two monitors are attached to the appliance, disconnect one monitor. The appliance supports only one monitor attached to either the front or back video connector.
4. Try using a monitor that is known to be working.
5. Run the appropriate online diagnostic test.

   If the tests run successfully, the problem is not related to video hardware.

   If the tests fail, see Getting Technical Support on page 2.

Troubleshooting a USB Device

To troubleshoot a USB device:

1. Use the following steps to troubleshoot a USB keyboard. For other USB devices, go to step 2.

   a. Disconnect the keyboard from the appliance briefly and reconnect it.

   b. Connect the keyboard to the USB port on the opposite side of the appliance.

      If the problem is resolved, restart the appliance, enter the System BIOS, and check if the nonfunctioning USB ports are enabled.

   c. Replace the keyboard with another working keyboard.

      If the problem is resolved, replace the faulty keyboard.

If the problem is not resolved, proceed to the next step to begin troubleshooting the other USB devices attached to the appliance.

2. Power down all attached USB devices and disconnect them from the appliance.

3. Restart the appliance and, if your keyboard is functioning, enter the System Setup Program. Verify that all USB ports are enabled.

If your keyboard is not functioning, you can also use remote access.

4. Reconnect and power on each USB device one at a time.

5. If a device causes the same problem, power down the device, replace the USB cable, and power up the device.

If the problem persists, replace the device.

If all troubleshooting fails, see Getting Technical Support on page 2.

Troubleshooting a Serial I/O Device

To troubleshoot a serial I/O device:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.

2. Swap the serial interface cable with another working cable, and power on the appliance and the serial device.

If the problem is resolved, replace the interface cable.

3. Power off the appliance and the serial device, and swap the device with a comparable device.

4. Power on the appliance and the serial device.

If the problem is resolved, replace the serial device.

If the problem persists, see Getting Technical Support on page 2.

Troubleshooting a NIC

To troubleshoot a NIC:

1. Run the appropriate online diagnostic test.

2. Restart the appliance and check for any system messages pertaining to the NIC controller.

3. Check the appropriate indicator on the NIC connector. See NIC Indicator Codes on page 12.

   ❍ If the link indicator does not light, check all cable connections.

   ❍ If the activity indicator does not light, the network driver files might be damaged or missing.

   ❍ Use another connector on the switch or hub.

If you are using a NIC card instead of an embedded NIC, see the documentation for the NIC card.

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

5. Enter the System BIOS and confirm that the NIC ports are enabled.

6. Ensure that the NICs, hubs, and switches on the network are all set to the same data transmission speed and duplex. See the documentation for each network device.

7. Ensure that all network cables are of the proper type and do not exceed the maximum length.

   If all troubleshooting fails, see Getting Technical Support on page 2.

Troubleshooting a Wet Appliance

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To troubleshoot a wet appliance:

1. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.

2. Open the appliance. See Opening the Appliance on page 30.

3. Disassemble components from the appliance. See Chapter 2, Replacing Appliance Components.

   ❍ Cooling shroud

   ❍ Hard drives

   ❍ SD cards

   ❍ NIC hardware key

   ❍ Internal SD Module

   ❍ Expansion cards and both expansion-card risers

   ❍ Integrated storage controller

   ❍ iRAC6 Enterprise card

   ❍ Power supplies

   ❍ Processors and heat sinks

   ❍ Memory modules

   ❍ Fan bracket

4. Let the appliance dry thoroughly for at least 24 hours.

5. Reinstall the processors and heat sinks, memory modules, power supplies, cooling shroud, and fan bracket.

6. Close the appliance. See Closing the Appliance on page 30.

7. Reconnect the appliance to the electrical outlet, and power on the appliance.

> If the appliance does not start properly, see Getting Technical Support on page 2.

8. If the appliance starts properly, shut down the appliance and reinstall the rest of the components that you removed in step 3. See Installing an Expansion Card on page 48.

9. Run the appropriate online diagnostic test.

> If the tests fail, see Getting Technical Support on page 2.

Troubleshooting a Damaged Appliance

> Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To troubleshoot a damaged appliance:

1. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.

2. Open the appliance. See Opening the Appliance on page 30.

3. Ensure that the following components are properly installed:

   ❍ Expansion cards and both expansion-card risers

   ❍ Power supplies

   ❍ Fans and cooling shroud

   ❍ Processors and heat sinks

   ❍ Memory modules

   ❍ Hard-drive carriers

4. Ensure that all cables are properly connected.

5. Close the appliance. See Closing the Appliance on page 30.

6. Run the system-board tests in the system diagnostics.

> If the tests fail, see Getting Technical Support on page 2.

Troubleshooting the System Battery

> Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To troubleshoot the system battery:

1. Re-enter the time and date through the System Setup program.

2. Power off the appliance and disconnect it from the electrical outlet for at least one hour.

3. Reconnect the appliance to the electrical outlet and power on the appliance.

4. Enter the System Setup program.

   If the date and time are not correct in the System Setup program, replace the battery. See System Battery on page 60.

   If the problem is not resolved by replacing the battery, see Getting Technical Support on page 2.

Troubleshooting Power Supplies

At least one power supply must be installed for the appliance to operate. Operating the appliance with only one power supply installed for extended periods of time without a power-supply blank installed in the PS2 power-supply bay can cause the appliance to overheat.

To troubleshoot power supplies:

1. Identify the faulty power supply by the power supply's status indicator. See Power Indicator Codes on page 11.

   If troubleshooting a power supply mismatch error, replace *only* the power supply with the flashing indicator. Swapping the opposite power supply to make a matched pair can result in an error condition and unexpected appliance shutdown. To change from a High Output configuration to an Energy Smart configuration or vice versa, you must power off the appliance.

2. Reseat the power supply by removing and reinstalling it. See Installing a Power Supply on page 34 and Installing a Power Supply on page 34.

   After installing a power supply, allow several seconds for the appliance to recognize the power supply and to determine if it is working properly. The status indicator turns green to signify that the power supply is functioning properly.

3. If the problem persists, replace the faulty power supply with the same type of power supply.

   If the problem persists, see Getting Technical Support on page 2.

Troubleshooting Appliance Cooling Problems

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

Ensure that none of the following conditions exist:

◆ Appliance cover, cooling shroud, drive blank, power supply blank (in single power supply configurations), or front or back filler panel is removed.

◆ FAN5 blank or heat sink blank is removed in single-processor configurations.

◆ The expansion card installation guidelines have not been followed. See Expansion Card Installation Guidelines on page 47.

◆ Ambient temperature is too high. See your *Getting Started Guide* for the appliance's operating temperature requirements.

◆ External airflow is obstructed.

◆ Cables inside the appliance obstruct airflow.

◆ An individual cooling fan is removed or has failed. See Troubleshooting a Fan.

Troubleshooting a Fan

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To troubleshoot a fan:

1. Open the appliance. See Opening the Appliance on page 30.

The cooling fans are hot-swappable. To maintain proper cooling while the appliance is on, only replace one fan at a time.

2. Locate the faulty fan indicated by the LCD panel or the diagnostic software.

3. Reseat the fan. See Removing a Cooling Fan on page 38 and Installing a Cooling Fan on page 38.

Wait at least 30 seconds for the appliance to recognize the fan and determine whether it is working properly.

4. If the problem is not resolved, install a new fan.

If the replacement fan does not operate, see Getting Technical Support on page 2.

Troubleshooting Memory

> ⚠️ Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

> ⚠️ Invalid memory configurations can cause your appliance to halt at startup without video output.

To troubleshoot memory:

1. If the appliance is operational, run the appropriate online diagnostic test.

    If diagnostics indicates a fault, follow the corrective actions provided by the diagnostic program.

2. If the appliance is not operational, power off the appliance and attached peripherals, and unplug the appliance from the power source. Wait at least 10 seconds and then reconnect the appliance to power.

3. Power on the appliance and attached peripherals and note the messages on the screen or LCD panel.

    Go to step12 if an error message appears indicating a fault with a specific memory module.

4. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.

5. Open the appliance. See Opening the Appliance on page 30.

6. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.

7. Check the memory channels and ensure that they are populated correctly.

8. Reseat the memory modules in their sockets. See Installing Memory Modules on page 56.

9. Install the cooling shroud. See Installing the Cooling Shroud on page 37.

10. Close the appliance. See Closing the Appliance on page 30.

11. Reconnect the appliance to its electrical outlet, and power on the appliance and attached peripherals.

    If the problem is not resolved, proceed with the next step.

12. Power off the appliance and attached peripherals, and disconnect the appliance from the power source.

13. Open the appliance. See Opening the Appliance on page 30.

14. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.

15. If a diagnostic test or error message indicates a specific memory module as faulty, swap or replace the module.

16. To troubleshoot an unspecified faulty memory module, replace the memory module in the first DIMM socket with a module of the same type and capacity. See Installing Memory Modules on page 56.

17. Install the cooling shroud. See Installing the Cooling Shroud on page 37.
18. Close the appliance. See Closing the Appliance on page 30.
19. Reconnect the appliance to its electrical outlet, and power on the appliance and attached peripherals.
20. As the appliance boots, observe any error message that appears on the screen or the LCD panel on the front of the appliance.
21. If the memory problem is still indicated, repeat 12 through 20 for each memory module installed.

    If the problem persists after all memory modules have been checked, see Getting Technical Support on page 2.

Troubleshooting an Optical Drive

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To troubleshoot an optical drive:

1. If applicable, remove the bezel. See Removing the Front Bezel on page 29.
2. Try using a different DVD.
3. Ensure that the device drivers for the optical drive are installed and are configured correctly
4. Enter the System Setup program and ensure that the drive's controller is enabled.
5. Run the appropriate online diagnostic test.
6. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.
7. Open the appliance. See Opening the Appliance on page 30.
8. Ensure that the interface cable is securely connected to the optical drive and to the appliance board. See Optical Drive on page 40.
9. Ensure that a power cable is properly connected to the drive and the appliance board.
10. Close the appliance. See Closing the Appliance on page 30.
11. Reconnect the appliance to the electrical outlet, and power on the appliance and attached peripherals.

    If the problem is not resolved, see Getting Technical Support on page 2.

Troubleshooting a Hard Drive

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

This troubleshooting procedure can destroy data stored on the hard drive. Before you proceed, back up all files on the hard drive.

To troubleshoot a hard drive:

1. Run the appropriate online diagnostics test.

    Depending on the results of the diagnostics test, proceed as needed through the following steps.

2. Remove the bezel. See Removing the Front Bezel on page 29.

3. If your hard drives are configured in a RAID array, perform the following steps.

    a. Restart the appliance and enter the host adapter configuration utility program by pressing <Ctrl><R> for a RAID controller.

        See the documentation supplied with the host adapter for information about the configuration utility.

    b. Ensure that the hard drives have been configured correctly for the RAID array.

    c. Take the hard drive offline and then reseat the hard drive. See Removing a Hot-Swap Hard Drive on page 32.

    d. Exit the configuration utility and allow the appliance to boot to the operating system.

4. Ensure that the required device drivers for your controller card are installed and are configured correctly.

5. Restart the appliance, enter the System Setup program, and verify that the controller is enabled and the drives appear in the System Setup program.

    If the problem persists, see Troubleshooting a Storage Controller.

Troubleshooting a Storage Controller

⚠ Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To troubleshoot a storage controller:

1. Run the appropriate online diagnostic test.

2. Enter the System Setup program and ensure that the RAID controller is enabled.

3. Restart the appliance and press `<Ctrl><R>` for a RAID controller to enter the configuration utility program.

   See the controller's documentation for information about configuration settings.

4. Check the configuration settings, make any necessary corrections, and restart the appliance.

5. Power off the appliance and attached peripherals, and disconnect the appliance from its electrical outlet.

6. Open the appliance. See Opening the Appliance on page 30.

7. Ensure that the controller card is firmly seated into the expansion-card connector. See Installing the Integrated Storage Controller Card on page 43.

8. If you have a battery-cached RAID controller, ensure that the RAID battery is properly connected and, if applicable, the memory module on the RAID card is properly seated.

9. Verify that the cable connections between the SAS backplane and the integrated storage controller are correct. See Installing the Integrated Storage Controller Card on page 43.

10. Ensure that the cables are firmly connected to the storage controller and the SAS backplane board.

11. Close the appliance. See Closing the Appliance on page 30.

12. Reconnect the appliance to its electrical outlet, and power on the appliance and attached peripherals.

    If the problem persists, see Getting Technical Support on page 2.

Troubleshooting Expansion Cards

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

When troubleshooting an expansion card, see the documentation for your AOS release and the expansion card.

To troubleshoot expansion cards:

1. Run the appropriate online diagnostic test.
2. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.
3. Open the appliance. See Opening the Appliance on page 30.
4. Verify that the installed expansion cards are compliant with the expansion-card installation guidelines. See Expansion Cards and Expansion-Card Risers on page 47.
5. Reseat any expansion card that is not firmly seated in its connector. See Installing an Expansion Card on page 48.
6. Close the appliance. See Closing the Appliance on page 30.
7. Reconnect the appliance to the electrical outlet, and power on the appliance and attached peripherals.
8. If the problem is not resolved, proceed to 9.
9. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.
10. Open the appliance. See Opening the Appliance on page 30.
11. Remove all expansion cards installed in the appliance. See Removing an Expansion Card on page 49.
12. Reseat the expansion-card risers to the system-board. See Expansion Cards and Expansion-Card Risers on page 47.
13. Close the appliance. See Closing the Appliance on page 30.
14. Reconnect the appliance to the electrical outlet, and power on the appliance and attached peripherals.
15. Run the appropriate online diagnostic test.

    If the tests fail, see Getting Technical Support on page 2.

16. For each expansion card you removed in 11, perform the following steps:

    a. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.
    b. Open the appliance. See Opening the Appliance on page 30.
    c. Reinstall one of the expansion cards.
    d. Close the appliance. See Closing the Appliance on page 30.

e. Run the appropriate diagnostic test.

If the tests fail, see Getting Technical Support on page 2.

Troubleshooting the Processors

⚠ Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To troubleshoot the processors:

1. Run the appropriate online diagnostics test.
2. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.
3. Open the appliance. See Opening the Appliance on page 30.
4. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.
5. Ensure that each processor and heat sink are properly installed. See Installing a Processor on page 59.
6. Install the cooling shroud. See Installing the Cooling Shroud on page 37.
7. Close the appliance. See Closing the Appliance on page 30.
8. Reconnect the appliance to the electrical outlet, and power on the appliance and attached peripherals.
9. Run the appropriate online diagnostic test.
10. For systems with multiple processors, power off the system and attached peripherals, and disconnect the system from the electrical outlet.
11. Open the system. See Opening the Appliance on page 30.
12. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.

⚠ Be careful not to bend any of the pins on the ZIF socket when removing the processor. Bending the pins can permanently damage the system board.

13. Remove processor 2. See Removing a Processor on page 57.
14. Install the cooling shroud. See Installing the Cooling Shroud on page 37.
15. Close the system. See Closing the Appliance on page 30.
16. Reconnect the system to the electrical outlet, and power on the system and attached peripherals.
17. Run the appropriate online diagnostic test.

If the test fails, the processor is faulty. See Getting Technical Support on page 2.

18. Power off the system and attached peripherals, and disconnect the system from the electrical outlet.
19. Open the system. See Opening the Appliance on page 30.
20. Remove the cooling shroud. See Removing the Cooling Shroud on page 36.

21. Install the processor with the processor you removed in 13. See Installing a Processor on page 59.

22. Install the cooling shroud. See Installing the Cooling Shroud on page 37.

23. Repeat 15 through 17.

   If the problem persists, the system board is faulty. See Getting Technical Support on page 2.

Jumpers and Connectors

This chapter provides specific information about the appliance jumpers. It also provides some basic information on jumpers and switches and describes the connectors on the various boards in the appliance. Topics include:

◆ System-Board Jumpers on page 84

◆ System-Board Connectors on page 85

◆ SAS Backplane Board Connectors on page 87

◆ Expansion-Card Riser-Board Components and PCIe Buses on page 87

◆ Disabling a Forgotten Password on page 88

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

System-Board Jumpers

For information on resetting the password jumper to disable a password, see

Figure 33 System-Board Jumpers
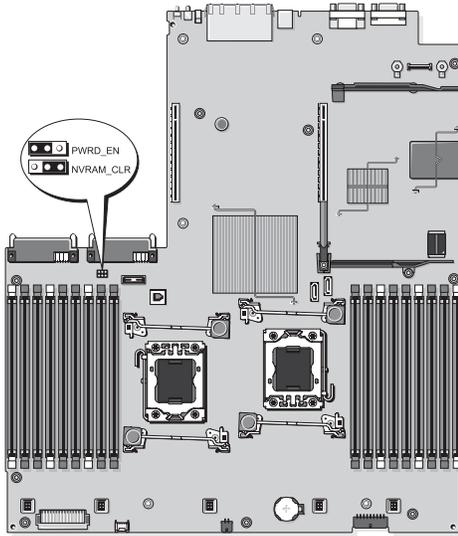
Jumper	Setting		Description
PWRD_EN		Pins 2 and 4 (default)	The password feature is enabled.
		Pins 4 and 6	The password feature is disabled and iRAC6 local access is unlocked at the next AC power cycle.
NVRAM_CLR		Pins 3 and 5 (default)	The configuration settings are retained at system boot.
		Pins 1 and 3	The configuration settings are cleared at the next appliance boot. If the configuration settings become corrupted to the point where the appliance does not boot, install the jumper and boot the appliance. Remove the jumper before restoring the configuration information.

System-Board Connectors

	Connector	Description
1	RISER2	expansion-card riser 2 connector
2	RISER1	expansion-card riser 1 connector
3	iRAC6	iRAC6 Enterprise card connector
4	SATA_A	SATA A connector
5	SATA_B	SATA B connector
6	B1 B4 B7 B2 B5 B8 B3 B6 B9	memory module slot B1(white release lever) memory module slot B4 memory module slot B7 memory module slot B2(white release lever) memory module slot B5 memory module slot B8 memory module slot B3(white release lever) memory module slot B6 memory module slot B9

	Connector	Description
7	FAN5	Cooling fan
8	BP_PWR	Backplane power connector
9	CPU2	Processor 2
10	FAN4	Cooling fan
11	BATTERY	System battery
12	DVD/TBU_PWR	Power connector for optical drive and tape backup unit
13	FAN3	Cooling fan
14	CPU1	Processor 1
15	CTRL_USB	Control panel USB interface connector
16	FAN2	Cooling fan
17	CTRL_PNL	Control panel interface connector
18	FAN1	Cooling fan
19	A1 A4 A7 A2 A5 A8 A3 A6 A9	memory module slot A1(white release lever) memory module slot A4 memory module slot A7 memory module slot A2(white release lever) memory module slot A5 memory module slot A8 memory module slot A3(white release lever) memory module slot A6 memory module slot A9
20	PWR2	Power supply connector for PS2
21	PWR1	Power supply connector for PS1
22	ISCSI_KEY	NIC hardware key

SAS Backplane Board Connectors

Figure 35   SAS Backplane Board for 3.5-Inch Hard Drives (6 Slots)
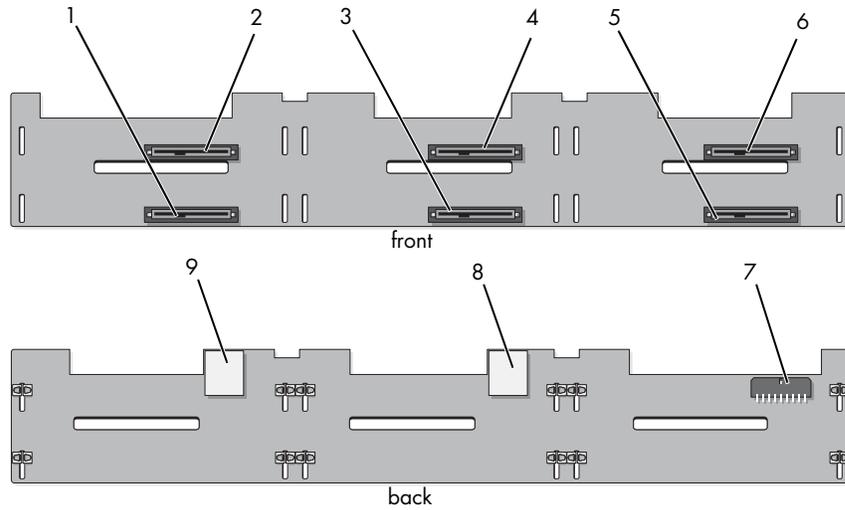
1	drive 1 connector	2	drive 0 connector
3	drive 3 connector	4	drive 2 connector
5	drive 5 connector	6	drive 4 connector
7	backplane power (BP_PWR)	8	SAS A connector
9	SAS B connector		

Expansion-Card Riser-Board Components and PCIe Buses

Figure 36   PCIe Expansion-Card Riser 1 Components
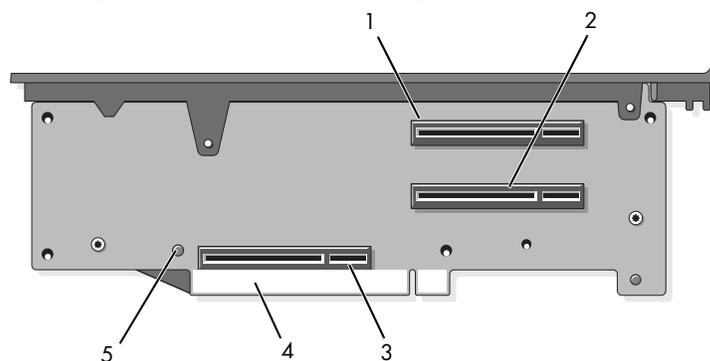
1	slot 1 PCIe - x4 link (full-height, 30.99-cm [12.2-in] length)	2	slot 2 PCIe - x4 link (low profile, 24.13-cm [9.5-in] length)
3	storage controller socket	4	card edge connector

5	release button		

Figure 37   Standard PCIe Expansion-Card Riser 2 Components

1	chassis intrusion switch	2	screw
3	slot 3 PCIe x8 link (full-height, 24.13-cm [9.5-in] length)	4	slot 4 PCIe x8 link (full-height, 24.13-cm [9.5-in] length)
5	pin collars (2)	6	card edge connector

Disabling a Forgotten Password

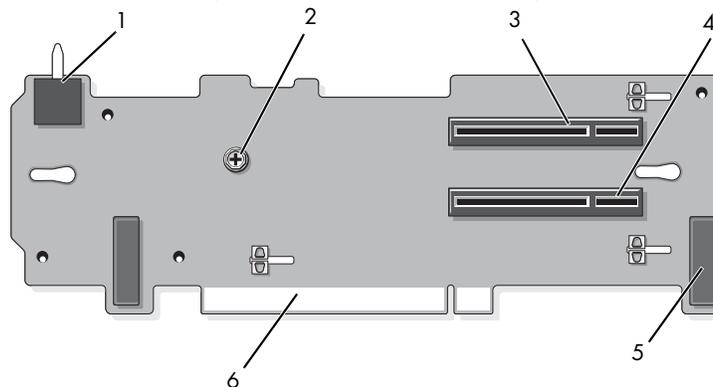The appliance's software security features include a system password and a setup. The password jumper enables these password features or disables them and clears any password(s) currently in use.

Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.

To disable a forgotten password:

1. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
2. Open the appliance. See Opening the Appliance on page 30.
3. Move the password jumper plug to the disabled position (pins 4 and 6).
4. See Figure 33 on page 84 to locate the password jumper (labeled PWRD_EN) on the system-board.
5. Close the appliance. See Closing the Appliance on page 30.
6. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

    The existing passwords are not disabled (erased) until the appliance boots with the password jumper plug in the disabled position. However, before you assign a new appliance and/or setup password, you must reset the jumper plug to the enabled position.

> If you assign a new appliance and/or setup password with the jumper plug still in the disabled position, the appliance disables the new password(s) the next time it boots.

7. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.

8. Open the appliance. See Opening the Appliance on page 30.

9. Move the password jumper plug to the enabled position (pins 2 and 4).

10. Close the appliance. See Closing the Appliance on page 30.

11. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

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