



# RazorSafe 170 (RS170) Hardware Guide

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This manual supports Archiving Operating System (AOS) release 5.0 and later AOS releases until replaced by a newer edition.

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# Preface



This guide documents hardware installation and maintenance issues for Mirapoint RazorSafe 170 (RS170) 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, Installing Appliance Components](#)—describes how to remove and install the various field-supported components.
- ◆ [Appendix A, Troubleshooting Appliance Hardware](#)—describes the various potential component failures and solutions.
- ◆ [Appendix B, Jumpers and Connectors](#)—describes the various system 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](mailto: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](mailto:support@mirapoint.com)  
 (China) [support@mirapoint.com.cn](mailto: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 <b>Status</b> tab, select <b>System Info</b> .
Host ID	License Hostid	In the <b>Status</b> tab, select <b>System Info</b> .
Serial number	Model Get Serial	In the <b>Status</b> tab, select <b>System Info</b> .
Hardware model	Model Get Chassis	In the <b>Status</b> tab, select <b>System Info</b> .

## 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
<b>Bold</b>	User interface elements	From the <b>File</b> menu, select <b>Save As...</b>
<i>Italic</i>	Definitions, emphasis, or titles	<i>A folder</i> is a container that stores email messages. Specify <i>at least two</i> DNS servers. For more information, see the <i>Mirapoint Message Server Administrator's Guide</i> .

\* Command-line interface (CLI) commands are case-insensitive, 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
Courier	Screen display text, command names, or text to type *	Enter your IP address: Use the License Hostid command. At the prompt, type Version.
<i>Courier Italic</i>	Variables for which you substitute when you type	<i>your_IP_address</i>

\* Command-line interface (CLI) commands are case-insensitive, 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.

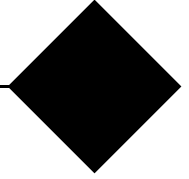
Table 3 Iconic Conventions in This Manual

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



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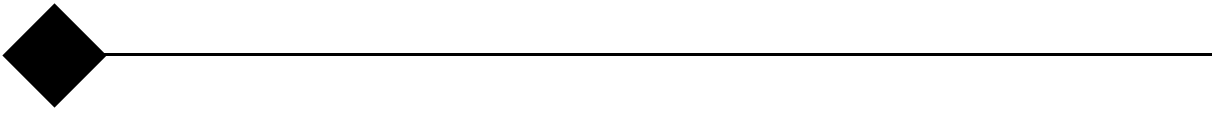
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# About Your Appliance

This chapter provides a high-level introduction of the Mirapoint RazorSafe 170 (RS170) appliance, including:

- ◆ [Accessing Appliance Features During Startup](#)
- ◆ [Front-Panel Features and Indicators](#) on page 12
- ◆ [Back-Panel Features and Indicators](#) on page 13
- ◆ [NIC Indicator Codes](#) on page 14
- ◆ [Appliance Messages](#) on page 15
- ◆ [Warning Messages](#) on page 24
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- ◆ [Other Information You May Need](#) on page 25

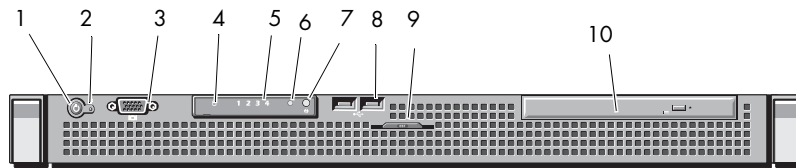
## Accessing Appliance Features During Startup




The following keystrokes provide access to appliance 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.

## Front-Panel Features and Indicators

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



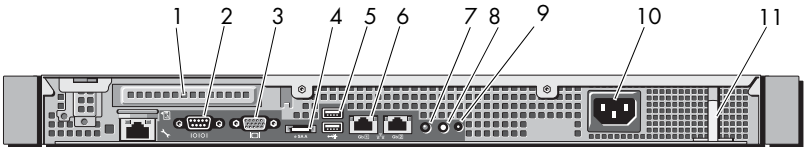
Item	Indicator, Button, or Connector	Icon	Description
1	Power-on indicator/ power button		<p>The power-on indicator lights when the appliance power is on.</p> <p>The power button controls the DC power supply output to the appliance. When the appliance bezel is installed, the power button is not accessible.</p> <p><b>Note:</b> When powering on the appliance, the video monitor can take from several seconds to over 2 minutes to display an image, depending on the amount of memory installed in the appliance.</p> <p><b>Caution:</b> Never use the power button to power off the appliance.</p>
2	NMI button		<p>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.</p> <p>Use this button only if directed to do so by qualified support personnel or by the AOS release's documentation.</p>
3	Video connector		Connects a monitor to the appliance.
4	Hard drive activity indicator		Lights up when the hard drive is in use.
5	Diagnostic indicator lights (4)		The four diagnostic indicator lights display error codes during system startup.
6	System status indicator		<p>Lights blue during normal appliance operation.</p> <p>Lights amber when the appliance needs attention due to a problem.</p>




Item	Indicator, Button, or Connector	Icon	Description
7	System identification button		The system identification buttons on the front and back panels can be used to locate a particular appliance within a rack. When one of the buttons is pushed, the appliance status indicators on the front and back panels light blue until one of the buttons is pushed again.
8	USB connectors (2)		Connects USB devices to the appliance. The ports are USB 2.0-compliant.
9	System identification panel		A slide-out panel for system information including the Express Service Tag, embedded NIC MAC address. Space is provided for an additional label.
10	Optical drive		One slim-line SATA DVD-ROM drive.  NOTE: DVD devices are data only.



## Back-Panel Features and Indicators

Figure 2 shows the controls, indicators, and connectors located on the appliance's back panel.

Figure 2 Back-Panel Features and Indicators



Item	Indicator, Button, or Connector	Icon	Description
1	PCIe expansion card slot		Connects a PCI Express expansion card.
2	Serial connector		Connects a serial device to the appliance.
3	Video connector		Connects a VGA display to the appliance.
4	eSATA	eSATA	Connects additional storage devices.
5	USB connectors (2)		Connects USB devices to the appliance. The ports are USB 2.0-compliant.

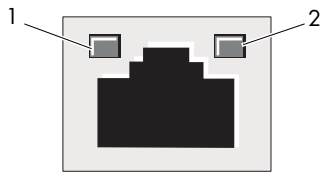
Item	Indicator, Button, or Connector	Icon	Description
6	Ethernet connectors (2)		Embedded 10/100/1000 NIC connectors.
7	System status indicator		Lights blue during normal appliance operation. Lights amber when the appliance needs attention due to a problem.
8	System identification button		The system identification buttons on the front and back panels can be used to locate a particular appliance within a rack. When one of the buttons is pushed, the appliance status indicators on the front and back panels light blue until one of the buttons is pushed again.
9	System identification connector		Connects the optional appliance status indicator assembly through the optional cable management arm.
10	Power supply		250 W power supply.
11	Retention clip		Secures the power cable.

### Guidelines for Connecting External Devices

- ◆ Power off power to the appliance and external devices before attaching a new external device. Power on any external devices before turning on the appliance (unless the documentation for the device specifies otherwise).
- ◆ Ensure that the appropriate driver for the attached device has been installed on the appliance.

### NIC Indicator Codes

Figure 3 NIC Indicators



1	link indicator	2	activity indicator
---	----------------	---	--------------------

Indicator	Description
Link and activity indicators are off	The NIC is not connected to the network.

Indicator	Description
Link indicator is green	The NIC is connected to a valid network link at 1000 Mbps.
Link indicator is amber	The NIC is connected to a valid network link at 10/100 Mbps.
Activity indicator is green blinking	Network data is being sent or received.

## Appliance Messages

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



If you receive an appliance message not listed in the table, check the documentation for the application that is running when the message appears or the AOS release's documentation for an explanation of the message and recommended action.

Table 4 Appliance Messages

Message	Causes	Corrective Actions
Alert! Continuing appliance boot accepts the risk that appliance may power down without warning.	The system configuration of processor, memory modules, and expansion card may not be supported by the power supply.	If any appliance components were just upgraded, return the appliance to the previous configuration. If the appliance boots without this warning, then the replaced component(s) are not supported with this power supply. See <a href="#">Power Supply</a> on page 50.
Alert! System fatal error during previous boot.	An error caused the appliance to reboot.	Check other system messages for additional information for possible causes.
BIOS MANUFACTURING MODE detected. MANUFACTURING MODE clears before the next boot. System reboot required for normal operation.	Appliance is in manufacturing mode.	Reboot to take the appliance out of manufacturing mode.
BIOS Update Attempt Failed!	Remote BIOS update attempt failed.	Retry the BIOS update. If problem persists, see <a href="#">Getting Technical Support</a> on page 3.
Caution! NVRAM_CLR jumper is installed on system-board. Please run SETUP.	NVRAM_CLR jumper is installed in the clear setting. CMOS has been cleared.	Move the NVRAM_CLR jumper to the default position (pins 3 and 5). See <a href="#">Figure 21</a> on page 72 for jumper location. Restart the appliance and re-enter the BIOS settings.

Table 4 Appliance Messages (Continued)

Message	Causes	Corrective Actions
CPU set to minimum frequency.	The processor speed may be intentionally set lower for power conservation.	If not an intentional setting, check any other system messages for possible causes.
Current boot mode is set to UEFI. Please ensure compatible bootable media is available. Use the system setup program to change the boot mode as needed.	The appliance failed to boot because UEFI boot mode is enabled in BIOS and the boot operating system is non-UEFI.	Ensure that the boot mode is set correctly and that the proper bootable media is available.
Decreasing available memory.	Faulty or improperly installed memory modules.	Reseat the memory modules. See <a href="#">Troubleshooting Memory</a> on page 65.
Embedded NICx and NICy: OS NIC=<ENABLED  DISABLED>, Management Shared NIC=<ENABLED  DISABLED>	The operating system NIC interface is set in BIOS. The Management Shared NIC interface is set in management tools.	Check the system management software or the System BIOS for NIC settings. If a problem is indicated, see <a href="#">Troubleshooting a NIC</a> on page 61.
Error 8602 - Auxiliary Device Failure. Verify that mouse and keyboard are securely attached to correct connectors.	Mouse or keyboard cable is loose or improperly connected.  Defective mouse or keyboard.	Reseat the mouse or keyboard cable.  Ensure that the mouse or keyboard is operational. See <a href="#">Troubleshooting a USB Device</a> on page 60.
Gate A20 failure.	Faulty keyboard controller; faulty system-board.	See <a href="#">Getting Technical Support</a> on page 3.
General failure.	The AOS release is unable to carry out the command.	This message is usually followed by specific information. Note the information, and take the appropriate action to resolve the problem.
Invalid configuration information - please run SETUP program.	An invalid appliance configuration caused a system halt.	Run the System BIOS and review the current settings.



Table 4 Appliance Messages (Continued)

Message	Causes	Corrective Actions
Keyboard controller failure.	Faulty keyboard controller; faulty system-board.	See <a href="#">Getting Technical Support</a> on page 3.
Keyboard data line failure. Keyboard stuck key failure.	Keyboard cable connector is improperly connected or the keyboard is defective.	Reseat the keyboard cable. If the problem persists, see <a href="#">Troubleshooting a USB Device</a> on page 60.
Keyboard fuse has failed.	Overcurrent detected at the keyboard connector.	See <a href="#">Getting Technical Support</a> on page 3.
Local keyboard may not work because all user accessible USB ports are disabled. If operating locally, power cycle the appliance and enter system setup program to change settings.	The USB ports are disabled in the system BIOS.	Power down and restart the appliance from the power button, and then enter the System BIOS to enable the USB port(s).
Manufacturing mode detected.	Appliance is in manufacturing mode.	Reboot to take the appliance out of manufacturing mode.
Maximum rank count exceeded. The following DIMM has been disabled: <i>x</i>	Invalid memory configuration. The appliance runs but with the specified memory module disabled.	Ensure that the memory modules are installed in a valid configuration. See <a href="#">General Memory Module Installation Guidelines</a> on page 42.
Memory address line failure at <i>address</i> , read <i>value</i> expecting <i>value</i> .	Faulty or improperly installed memory modules.	See <a href="#">Troubleshooting Memory</a> on page 65.
Memory double word logic failure at <i>address</i> , read <i>value</i> expecting <i>value</i> .	Faulty or improperly installed memory modules.	See <a href="#">Troubleshooting Memory</a> on page 65.
Memory Initialization Warning: Memory size may be reduced.	Invalid memory configuration. The appliance runs but with less memory than is physically available.	Ensure that the memory modules are installed in a valid configuration. See <a href="#">General Memory Module Installation Guidelines</a> on page 42.
Memory odd/even logic failure at <i>address</i> , read <i>value</i> expecting <i>value</i> .	Faulty or improperly installed memory modules.	See <a href="#">Troubleshooting Memory</a> on page 65.

Table 4 Appliance Messages (Continued)

Message	Causes	Corrective Actions
Memory write/read failure at <i>address</i> , read <i>value</i> expecting <i>value</i> .	Faulty or improperly installed memory modules.	See <a href="#">Troubleshooting Memory</a> on page 65.
Memory set to minimum frequency.	The memory frequency may be intentionally set lower for power conservation.	If not an intentional setting, check any other appliance messages for possible causes.
	The current memory configuration may support only the minimum frequency.	Ensure that your memory configuration supports the higher frequency. See <a href="#">General Memory Module Installation Guidelines</a> on page 42.
Memory tests terminated by keystroke.	POST memory test was terminated by pressing the spacebar.	Information only.
MEMTEST lane failure detected on <i>x</i> .	Invalid memory configuration. A mismatched memory module is installed.	Ensure that the memory modules are installed in a valid configuration. See <a href="#">General Memory Module Installation Guidelines</a> on page 42.
No boot device available.	Faulty or missing optical drive subsystem, hard drive, or hard-drive subsystem, or no bootable USB key installed.	Use a bootable USB key, CD, or hard drive. If the problem persists, see <a href="#">Troubleshooting a USB Device</a> on page 60, <a href="#">Troubleshooting an Optical Drive</a> on page 66, and <a href="#">Troubleshooting a Hard Drive</a> on page 67.
No boot sector on hard drive.	Incorrect configuration settings in System BIOS, or no operating system on hard drive.	Check the hard-drive configuration settings in the System BIOS. If necessary, install the operating system on your hard drive. See your AOS release documentation.
No timer tick interrupt.	Faulty system-board.	See <a href="#">Getting Technical Support</a> on page 3.
PCI BIOS failed to install.	PCIe device BIOS (Option ROM) checksum failure detected during shadowing. Cables to expansion card loose; faulty or improperly installed expansion card.	Reseat the expansion card. Ensure that all appropriate cables are securely connected to the expansion card. If the problem persists, see <a href="#">Troubleshooting Expansion Cards</a> on page 68.

Table 4 Appliance Messages (Continued)

Message	Causes	Corrective Actions
PCIe Training Error: Expected Link Width is $x$ , Actual Link Width is $y$ .	Faulty or improperly installed PCIe card in the specified slot.	Reseat the PCIe card in the specified slot number. See <a href="#">Troubleshooting Expansion Cards</a> on page 68. If the problem persists, see <a href="#">Getting Technical Support</a> on page 3.
Plug & Play Configuration Error.	Error encountered in initializing PCIe device; faulty system-board.	Install the NVRAM_CLR jumper in the clear position (pins 1 and 3) and reboot the appliance. See <a href="#">Figure 21</a> on page 72 for jumper location. If the problem persists, see <a href="#">Troubleshooting Expansion Cards</a> on page 68.
Quad rank DIMM detected after single rank or dual rank DIMM in socket.	Invalid memory configuration.	Ensure that the memory modules are installed in a valid configuration. See <a href="#">General Memory Module Installation Guidelines</a> on page 42.
Read fault. Requested sector not found.	The operating system cannot read from the USB medium or device, hard drive, or optical drive or the appliance could not find a particular sector on the disk, or the requested sector is defective.	Replace the optical medium, USB medium or device. Ensure that the USB or SATA cables are properly connected. See <a href="#">Troubleshooting a USB Device</a> on page 60, <a href="#">Troubleshooting an Optical Drive</a> on page 66, or <a href="#">Troubleshooting a Hard Drive</a> on page 67 for the appropriate drive(s) installed in your appliance.
SATA Port $x$ device not found.	There is no device connected to the specified SATA port.	Information only.
SATA port $x$ device auto-sensing error. SATA port $x$ device configuration error. SATA port $x$ device error.	The drive connected to the specified SATA port is faulty.	Replace the faulty drive.
Sector not found. Seek error. Seek operation failed.	Faulty hard drive or USB medium or device.	Replace the USB medium or device. Ensure that the USB is properly connected. See <a href="#">Troubleshooting a USB Device</a> on page 60, <a href="#">Troubleshooting an Optical Drive</a> on page 66, or <a href="#">Troubleshooting a Hard Drive</a> on page 67 for the appropriate drive(s) installed in your appliance.
Shutdown failure.	General system error.	See <a href="#">Getting Technical Support</a> on page 3.

Table 4 Appliance Messages (Continued)

Message	Causes	Corrective Actions
The amount of system memory has changed.	Memory has been added or removed or a memory module may be faulty.	If memory has been added or removed, this message is informative and can be ignored. If memory has not been added or removed, check the SEL to determine if single-bit or multi-bit errors were detected and replace the faulty memory module. See <a href="#">Troubleshooting Memory</a> on page 65.
The following DIMMs should match in geometry: <i>x,x,...</i> The following DIMMs should match in rank count: <i>x,x,...</i> The following DIMMs should match in size: <i>x,x,...</i> The following DIMMs should match in size and geometry: <i>x,x,...</i> The following DIMMs should match in size and rank count: <i>x,x,...</i>	Invalid memory configuration. The specified memory modules do not match in size, number of ranks, or number of data lanes.	Ensure that the memory modules are installed in a valid configuration. See <a href="#">General Memory Module Installation Guidelines</a> on page 42.
Thermal sensor not detected on <i>x</i> .	A memory module without a thermal sensor is installed in the specified memory slot.	Replace the memory module. See <a href="#">Processors</a> on page 47.
Time-of-day clock stopped.	Faulty battery or faulty chip.	See <a href="#">Troubleshooting the System Battery</a> on page 63.
Time-of-day not set - please run SETUP program.	Incorrect Time or Date settings; faulty system battery.	Check the Time and Date settings. If the problem persists, replace the system battery. See <a href="#">System Battery</a> on page 52.
Timer chip counter 2 failed.	Faulty system-board.	See <a href="#">Getting Technical Support</a> on page 3.

Table 4 Appliance Messages (Continued)

Message	Causes	Corrective Actions
TPM configuration operation honored. System will now reset.	A Trusted Platform Module (TPM) configuration command has been entered. The appliance reboots and executes the command.	Information only.
TPM configuration operation is pending. Press (I) to Ignore OR (M) to Modify to allow this change and reset the appliance. <b>WARNING:</b> Modifying could prevent security.	This message displays during appliance restart after a TPM configuration command has been entered. User interaction is required to proceed.	Enter I or M to proceed.
TPM failure.	A TPM function has failed.	See <a href="#">Getting Technical Support</a> on page 3.
Unable to launch System Services image. System halted!	System halted after F10 keystroke because System Services image is either corrupted in the appliance firmware or has been lost due to system-board replacement.	Restart the appliance and update the USC repository to the latest software to restore full functionality. See the USC user documentation for more information.
Unexpected interrupt in protected mode.	Improperly seated memory modules or faulty keyboard/mouse controller chip.	Reseat the memory modules. See <a href="#">Troubleshooting Memory</a> on page 65. If the problem persists, see <a href="#">Getting Technical Support</a> on page 3.
Unsupported CPU combination. Unsupported CPU stepping detected.	Processor is not supported by the appliance.	Install a supported processor. See <a href="#">Processors</a> on page 47.
Unsupported DIMM detected. The following DIMM has been disabled: x	Invalid memory configuration. The appliance runs but with the specified memory module disabled.	Ensure that the memory modules are installed in a valid configuration. See <a href="#">General Memory Module Installation Guidelines</a> on page 42.
Unsupported memory configuration. DIMM mismatch across slots detected: x,x,...	Invalid memory configuration. Memory modules are mismatched in the specified slots.	Ensure that the memory modules are installed in a valid configuration. See <a href="#">General Memory Module Installation Guidelines</a> on page 42.

Table 4 Appliance Messages (Continued)

Message	Causes	Corrective Actions
Warning: A fatal error has caused system reset! Please check the appliance event log!	A fatal appliance error occurred and caused the appliance to reboot.	Check the SEL for information that was logged during the error. See the applicable troubleshooting section in <a href="#">Troubleshooting Memory</a> on page 65 for any faulty components specified in the SEL.
Warning: Control Panel is not installed.	The control panel is not installed or has a faulty cable connection.	Install the control panel, or check the cable connections between the display module, the control panel board, and the system-board. See <a href="#">Control Panel Assembly</a> on page 53.
Warning! No micro code update loaded for processor <i>n</i> .	Micro code update failed.	Update the BIOS firmware. See <a href="#">Getting Technical Support</a> on page 3.
Warning! Performance degraded. CPU and memory set to minimum frequencies to meet PSU wattage. System will reboot.	The appliance configuration of processor, memory modules, and expansion card may not be supported by the power supply.	If any appliance components were just upgraded, return the appliance to the previous configuration. If the appliance boots without this warning, then the replaced component(s) are not supported with this power supply. See <a href="#">Power Supply</a> on page 50.
Warning! Unsupported memory configuration detected. The memory configuration is not optimal. The recommended memory configuration is: <i>&lt;message&gt;</i>	Invalid memory configuration. The appliance runs but with reduced functionality.	Ensure that the memory modules are installed in a valid configuration. See <a href="#">General Memory Module Installation Guidelines</a> on page 42. If the problem persists, see <a href="#">Troubleshooting Memory</a> on page 65.
Write fault Write fault on selected drive.	Faulty USB device or medium, optical drive assembly, hard drive, or hard-drive subsystem.	Replace the USB medium or device. Ensure that the USB or SATA cables are properly connected. <a href="#">Troubleshooting a USB Device</a> on page 60, <a href="#">Troubleshooting an Optical Drive</a> on page 66, or <a href="#">Troubleshooting a Hard Drive</a> on page 67.

Table 4 Appliance Messages (Continued)

Message	Causes	Corrective Actions
Current boot mode is set to UEFI. Please ensure compatible bootable media is available. Use the system setup program to change the boot mode as needed.	The appliance failed to boot because UEFI boot mode is enabled in BIOS and the boot operating system is non-UEFI.	Ensure that the boot mode is set correctly and that the proper bootable media is available.
Decreasing available memory.	Faulty or improperly installed memory modules.	Reseat the memory modules. See <a href="#">Troubleshooting Memory</a> on page 65.
Embedded NICx and NICy: OS NIC=<ENABLED  DISABLED>, Management Shared NIC=<ENABLED  DISABLED>	The operating system NIC interface is set in BIOS. The Management Shared NIC interface is set in management tools.	Check the system management software or the System BIOS for NIC settings. If a problem is indicated, see <a href="#">Troubleshooting a NIC</a> on page 61.
Error 8602 - Auxiliary Device Failure. Verify that mouse and keyboard are securely attached to correct connectors.	Mouse or keyboard cable is loose or improperly connected.	Reseat the mouse or keyboard cable.
	Defective mouse or keyboard.	Ensure that the mouse or keyboard is operational. See <a href="#">Troubleshooting a USB Device</a> on page 60.
Gate A20 failure.	Faulty keyboard controller; faulty system-board.	See <a href="#">Getting Technical Support</a> on page 3.
General failure.	The operating system is unable to carry out the command.	This message is usually followed by specific information. Note the information, and take the appropriate action to resolve the problem.
Invalid configuration information - please run SETUP program.	An invalid appliance configuration caused a system halt.	Run the System BIOS and review the current settings.
Keyboard controller failure.	Faulty keyboard controller; faulty system-board.	See <a href="#">Getting Technical Support</a> on page 3.

Table 4 Appliance Messages (Continued)

Message	Causes	Corrective Actions
Keyboard data line failure. Keyboard stuck key failure.	Keyboard cable connector is improperly connected or the keyboard is defective.	Reseat the keyboard cable. If the problem persists, see <a href="#">Troubleshooting a USB Device</a> on page 60.
Keyboard fuse has failed.	Overcurrent detected at the keyboard connector.	See <a href="#">Getting Technical Support</a> on page 3.
Local keyboard may not work because all user accessible USB ports are disabled. If operating locally, power cycle the appliance and enter system setup program to change settings.	The USB ports are disabled in the system BIOS.	Power down and restart the appliance from the power button, and then enter the System BIOS to enable the USB port(s).
Manufacturing mode detected.	System is in manufacturing mode.	Reboot to take the appliance out of manufacturing mode.

## 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 might 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 system diagnostic utilities may issue messages if you run diagnostic tests on your appliance.

## Alert Messages

Systems 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



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

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- ◆ 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 170 (RS170) 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](http://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.



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Always first check for updates online at [support.mirapoint.com](http://support.mirapoint.com), and read any updates, because they often supersede information in other documents.

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# Installing 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:

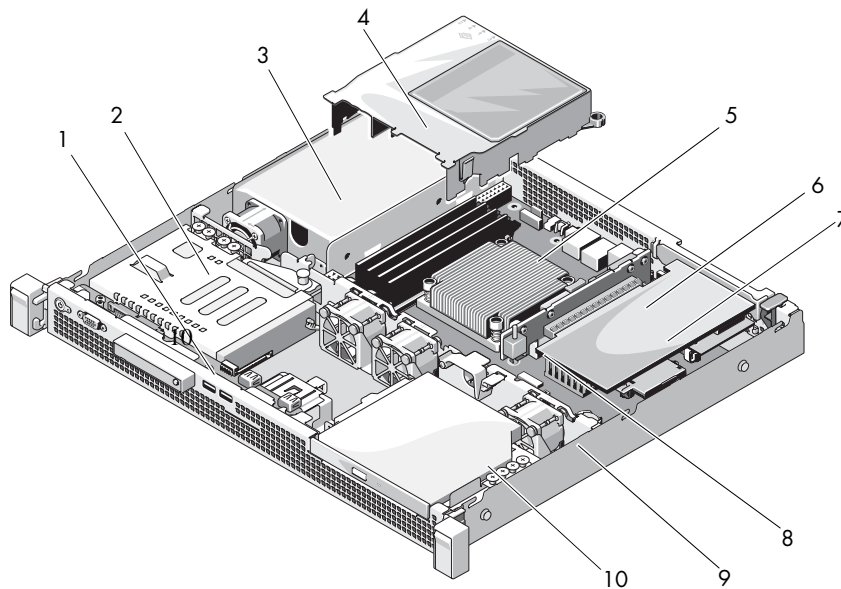
- ◆ [Recommended Tools](#)
- ◆ [Inside the Appliance](#) on page 28
- ◆ [Front Bezel](#) on page 28
- ◆ [Opening and Closing the Appliance](#) on page 29
- ◆ [Optical Drive](#) on page 31
- ◆ [Hard Drives](#) on page 33
- ◆ [Expansion Cards](#) on page 37
- ◆ [Expansion-Card Riser](#) on page 39
- ◆ [Cooling Shroud](#) on page 40
- ◆ [Memory](#) on page 42
- ◆ [Cooling Fans](#) on page 45
- ◆ [Processors](#) on page 47
- ◆ [Power Supply](#) on page 50
- ◆ [System Battery](#) on page 52
- ◆ [Control Panel Assembly](#) on page 53
- ◆ [System-Board](#) on page 55

## Recommended Tools

- ◆ Key to the appliance keylock
- ◆ #1 and #2 Phillips screwdrivers
- ◆ Wrist grounding strap

## Inside the Appliance

Figure 4 Inside the Appliance

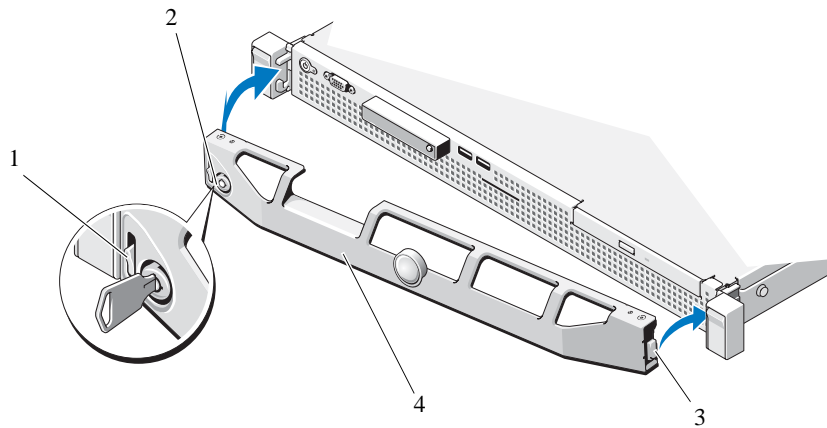


1	control panel board	2	hard drive
3	power supply	4	cooling shroud
5	heat sink/processor	6	expansion-card riser
7	expansion card	8	chassis intrusion switch
9	appliance cooling fans (3)	10	optical drive
11	hard drive backplane	12	power supply cooling fans (2)

## 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 5 on page 29).

Figure 5 Removing the Front Bezel



1	release latch	2	keylock
3	hinge tab	4	bezel

## 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 5).

## Installing the Front Bezel

To install the front bezel:

1. Hook the right end of the bezel onto the chassis.
2. Fit the free end of the bezel onto the appliance.
3. Secure the bezel with the keylock.

## Opening and Closing the Appliance

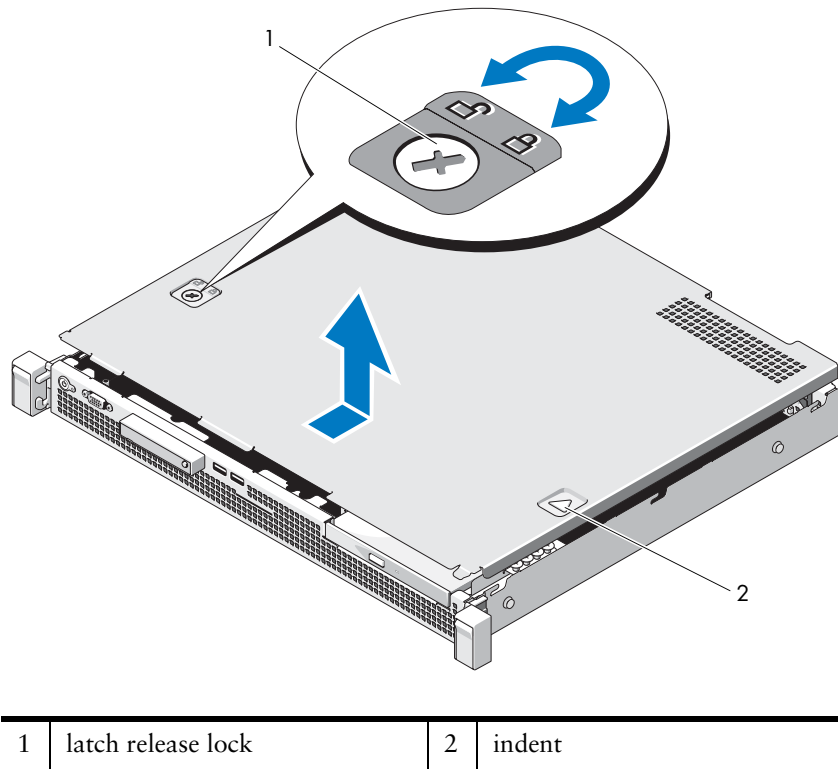


Only trained service technicians are authorized to remove the appliance cover and access any of the components inside the appliance. Before you begin this procedure, review the safety instructions that came with the appliance.



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

Figure 6 Removing and Replacing the Appliance Cover



## 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 6).
3. Lift up on the latch on top of the appliance and slide the cover back (Figure 6).
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 6).
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.

## Optical Drive

A slimline DVD optical drive slides into the front panel and connects to the SATA controller on the system-board.



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DVD devices are data only.

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### Removing an Optical Drive



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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.

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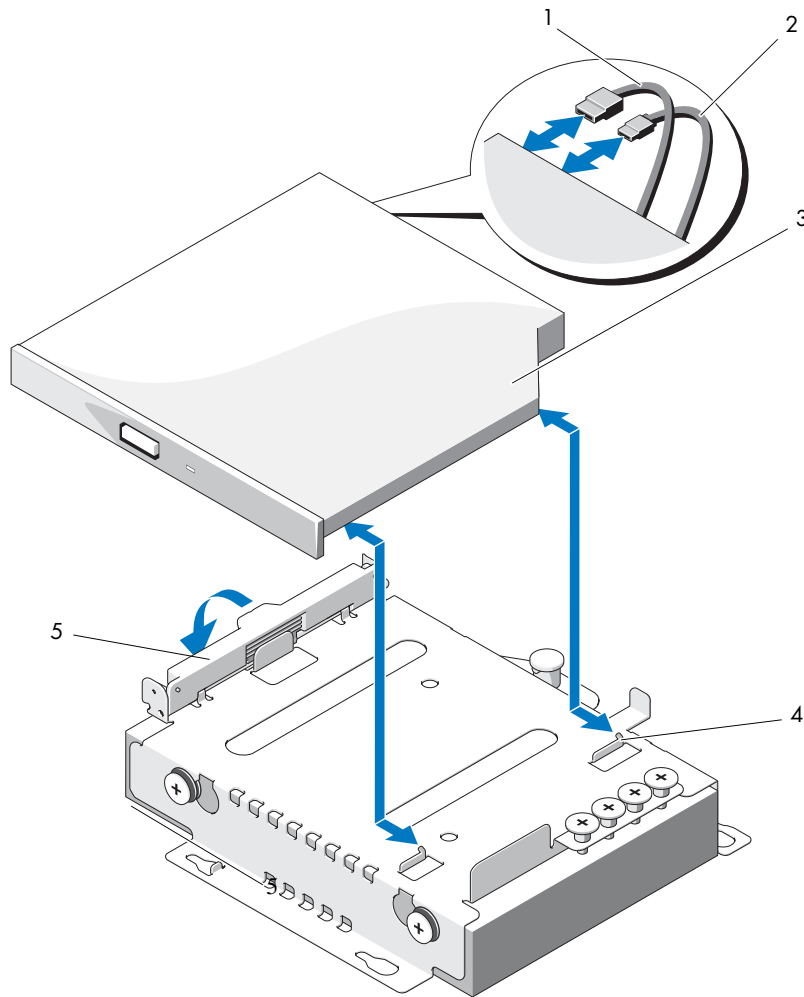
To remove an optical drive:

1. If installed, remove the optional front bezel. See [Removing the Front Bezel](#) on page 29.
2. Power off the appliance, including any attached peripherals, and disconnect the appliance from its electrical outlet.
3. Open the appliance. See [Opening the Appliance](#) on page 30.
4. Pull the blue pull tab on the data cable to disconnect it from the back of the drive and the system-board.
5. Disconnect the power and data cables from the back of the drive.

Note the routing of the power and data cables underneath the tabs on the appliance chassis as you remove them from the system-board and drive. You must route these cables properly when you replace them to prevent them from being pinched or crimped.

6. Press down the release latch. Lift and angle the drive to release it from the notch on the metal standoffs.
7. Lift the drive out of the chassis ([Figure 7](#) on page 32).
8. Close the appliance. See [Closing the Appliance](#) on page 30.
9. If applicable, replace the optional front bezel. See [Installing the Front Bezel](#) on page 29.

Figure 7 Removing the Optical Drive



1	data cable	2	power cable
3	optical drive	4	metal standoff with notches (2)
5	release latch		

## Installing 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 install an optical drive:

1. If installed, remove the optional front bezel. See [Removing the Front Bezel](#) on page 29.
2. Power off the appliance, including any attached peripherals, and disconnect the appliance from its electrical outlet.



3. Open the appliance. See [Opening the Appliance](#) on page 30.
4. Press down the release latch and place the optical drive in position.
5. Align the two notches of the metal standoffs on the chassis with the holes in the drive ([Figure 7](#) on page 32).
6. Slide the drive into the notches and seat it firmly.
7. Push the release latch back to position.
8. Connect the power cable.
9. Connect the data cable to the back of the drive and to the connector on the system-board.

You must route these cables properly underneath the tabs on the appliance chassis to prevent them from being pinched or crimped.

10. Connect the data cable to the SATA\_C connector on the system-board ([Figure 21](#) on page 72).
11. Close the appliance. See [Closing the Appliance](#) on page 30.
12. If applicable, replace the optional front bezel. See [Installing the Front Bezel](#) on page 29.
13. Reconnect the appliance and peripherals to their electrical outlets.

## Hard Drives

Your appliance supports two 3.5-inch SATA. The hard drives are installed internally in the appliance ([Figure 4](#) on page 28) and connected to the system-board.

### Removing a Hard Drive



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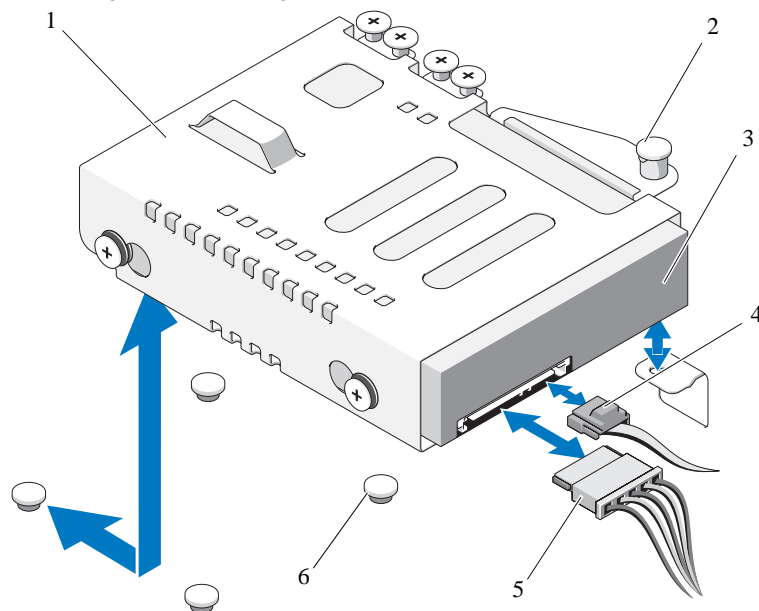
Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized is not covered by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

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To remove a hard drive:

1. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet and from the peripherals
2. Open the appliance. See [Opening the Appliance](#) on page 30.
3. Disconnect the data and power cable from the hard drive.
4. If present, remove the optical drive mounted above the hard drive 1 (HDD1) bracket. See [Removing an Optical Drive](#) on page 31.
5. While pulling the release pin up, grip the hard-drive bracket and slide it away from the chassis wall ([Figure 8](#) on page 34).
6. Lift the hard-drive bracket away from the appliance.

Figure 8 Removing and Installing a Hard Drive



1	drive bracket	2	release pin
3	hard drive	4	data cable
5	power cable	6	chassis tabs (4)



If you are not replacing the hard drive, remove the drive from the drive bracket (see [Removing a Hard Drive From a Hard-Drive Bracket](#) on page 35) and replace the empty bracket back into the drive bay.

7. Close the appliance. See [Closing the Appliance](#) on page 30.

## Installing a Hard Drive



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

To install a hard drive:

1. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet and from the peripherals.
2. Open the appliance. See [Opening the Appliance](#) on page 30.
3. If present, remove the optical drive mounted above the hard drive 1 (HDD1) bracket. See [Removing an Optical Drive](#) on page 31.
4. Install the hard drive into the bracket. See [Installing a Hard Drive into a Hard-Drive Bracket](#) on page 36.

5. Align the four slots under the hard drive bracket with the four tabs on the chassis and slide the hard drive bracket toward the chassis wall till it snaps into place ([Figure 8](#) on page 34).

If you replaced HDD1, reinstall the optional optical drive above the HDD1 bracket. See [Installing an Optical Drive](#) on page 32.

6. Connect the power and data cables to the hard drive:
  - When connecting to a SATA hard drive, connect the data cable to the connector on the card edge.
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. Exit the System BIOS and reboot the appliance.

See the documentation that came with the hard drive for instructions on installing any software required for drive operation.

## Removing a Hard Drive From a Hard-Drive Bracket



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A 2.5-inch hard drive is encased in a 2.5-inch hard-drive bracket which is further encased in a 3.5-inch hard-drive bracket.

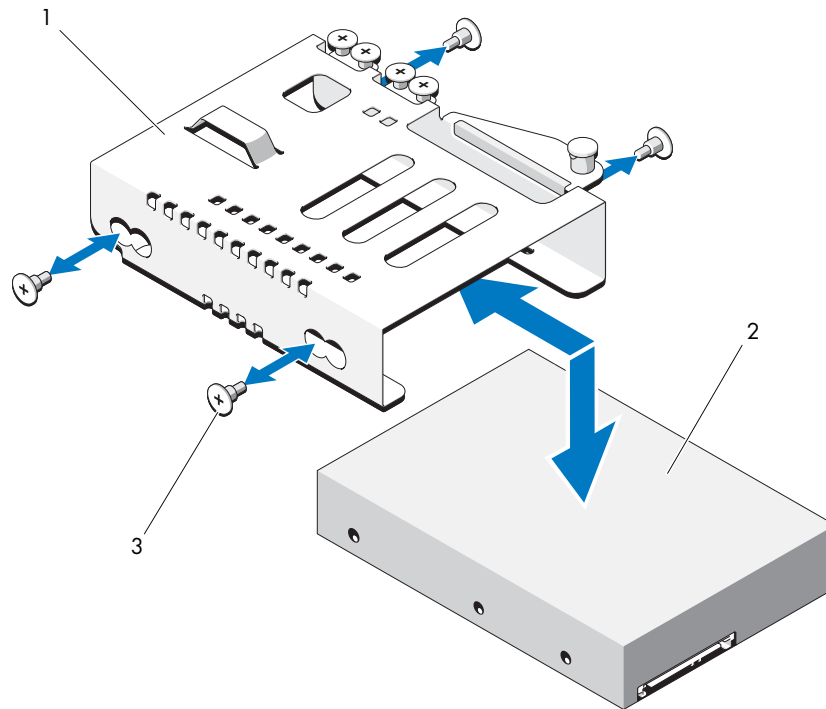
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To remove a hard drive from a hard-drive bracket:

1. Remove the four screws from the slide rails on the hard-drive bracket.

If you are removing a 2.5-inch hard drive, separate the 2.5-inch hard-drive bracket from the 3.5-inch hard-drive bracket.
2. Separate the hard drive from the bracket ([Figure 9](#) on page 36).

Figure 9 Removing a Hard Drive From a Hard-Drive Bracket



1	hard-drive bracket	2	hard drive
3	screws (4)*		

\*Screws are supplied along with the hard drives.

## Installing a Hard Drive into a Hard-Drive Bracket



A 2.5-inch hard drive is encased in a 2.5-inch hard-drive bracket which is further encased in a 3.5-inch hard-drive bracket.

To remove a hard drive from a hard-drive bracket:

1. Insert the hard drive into the hard-drive bracket (Figure 17 on page 51).  
If you are installing a 2.5-inch hard drive, position the 2.5-inch hard-drive bracket into the 3.5-inch hard drive bracket.
2. Align the holes on the hard drive with the back set of holes on the hard-drive bracket.
3. Attach the four screws to secure the hard drive to the hard-drive bracket.

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# Expansion Cards

## Expansion Card Installation Guidelines

Your appliance supports one PCIe Generation 2 expansion card installed on an expansion-card riser.

- ◆ The expansion-card slot supports full-height and half-length cards.
- ◆ The expansion-card slot is not hot-swappable.

## Installing an Expansion Card



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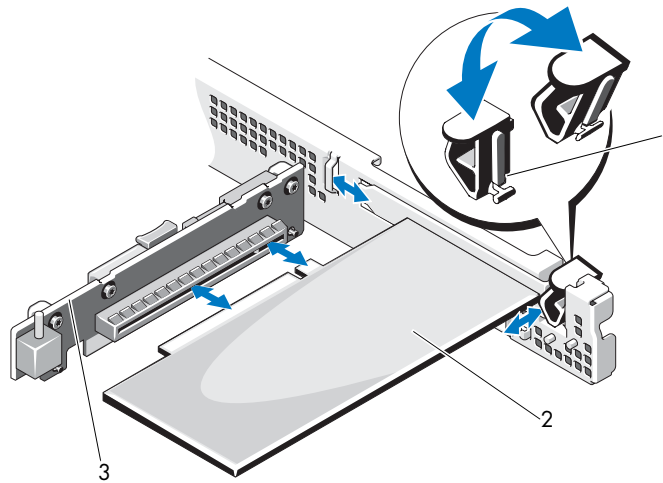
Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized is not covered by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

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To install an expansion card:

1. Unpack the expansion card and prepare it for installation.  
For instructions, see the documentation accompanying the card.
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. Open the expansion-card latch and remove the filler bracket ([Figure 10](#) on page 38).
5. Holding the expansion card by its edges, position the card so that the card-edge connector aligns with the expansion-card connector on the expansion-card riser.
6. Insert the card-edge connector firmly into the expansion-card connector until the card is fully seated.
7. Close the expansion-card latch ([Figure 10](#) on page 38).

Figure 10 Installing or Removing an Expansion Card



1	expansion-card latch	2	expansion card
3	expansion-card riser		

8. Connect any cables to the expansion card.
9. Close the appliance. See [Closing the Appliance](#) on page 30.
10. Reconnect the appliance to its electrical outlet and power the appliance on, including any attached peripherals.

## Removing an Expansion Card



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

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 all cables from the card.
4. Open the expansion-card latch ([Figure 10](#)).
5. Grasp the expansion card by its edges and carefully remove it from the connector on the expansion-card riser.
6. If you are removing the card permanently, install a metal filler bracket over the empty expansion slot opening and close the expansion-card latch.



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You must install a filler bracket over an empty expansion slot to maintain Federal Communications Commission (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.

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7. Close the appliance. See [Closing the Appliance](#) on page 30.
8. Reconnect the appliance to its electrical outlet and power the appliance on, including any attached peripherals.

## Expansion-Card Riser

The appliance's expansion-card riser supports an x16 link Gen2 PCIe expansion card.

### Removing an Expansion-Card Riser



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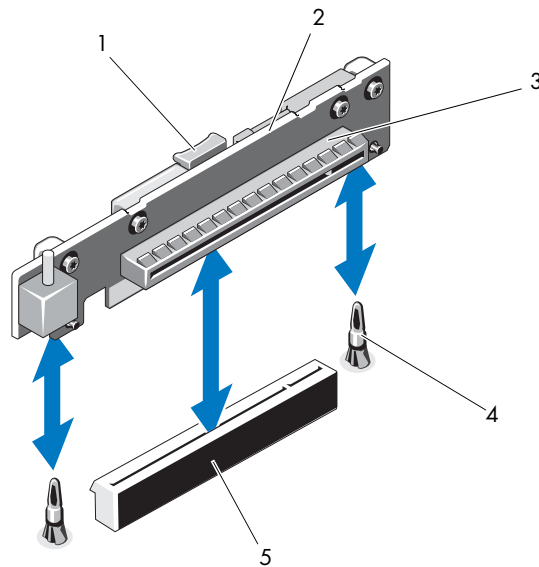
Many repairs may only be done by a certified service technician. You should only perform troubleshooting and simple repairs as authorized in your product documentation, or as directed by the online or telephone service and support team. Damage due to servicing that is not authorized is not covered by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

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To remove an expansion-card riser:

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. If installed, remove the expansion card from the expansion slot, now. See [Removing an Expansion Card](#) on page 38.
4. To remove the expansion-card riser, grasp the riser guides and lift the expansion-card riser from the chassis ([Figure 11](#) on page 40).

Figure 11 Installing or Removing an Expansion-Card Riser



1	release tab	2	expansion-card riser
3	expansion-card slot	4	riser guide posts (2)
5	expansion-card riser connector		

## Installing an Expansion-Card Riser

To install an expansion-card riser:

1. Align the expansion-card riser guide posts with the riser guide posts on the system-board ([Figure 11](#) on page 40).
2. Lower the expansion-card riser into place until the expansion-card riser connector is fully seated.
3. If applicable, reinstall the expansion-card. See [Installing an Expansion Card](#) on page 37.
4. Close the appliance. See [Closing the Appliance](#) on page 30.
5. Reconnect the appliance to its electrical outlet and power the appliance on, including any attached peripherals.

## Cooling Shroud

The system-board shroud covers the processor, heat sink, and memory modules, and provides air flow to these components. Airflow is facilitated by the cooling fan modules, which are positioned directly behind the cooling shroud.



## Removing the Cooling Shroud



The memory modules and heat sink can get very hot during normal operation. Ensure that the memory modules and heat sink have had sufficient time to cool before you touch it.



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

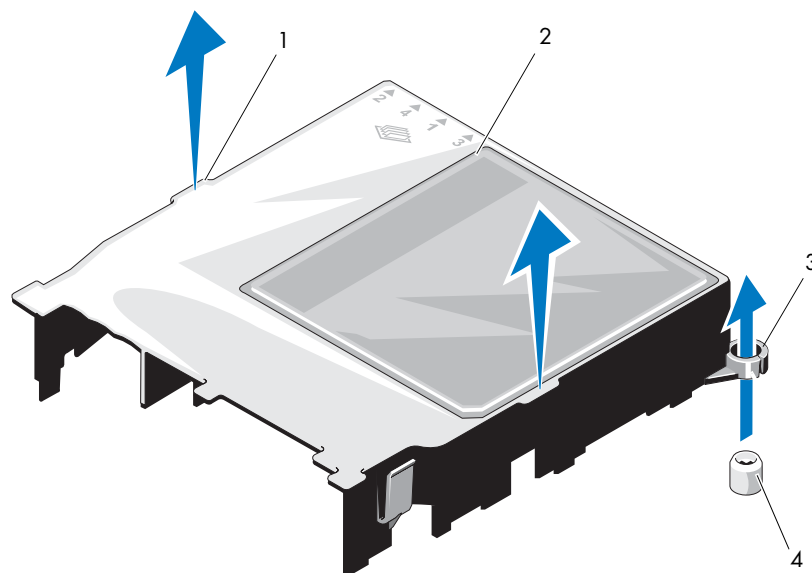


Never operate your appliance with the cooling shroud removed. The appliance may get overheated quickly, resulting in shutdown of the appliance and loss of data.

To remove the system-board 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. Hold the touch points and gently lift the shroud straight up and away from the system-board ([Figure 12](#)).

Figure 12 Installing and Removing the Cooling Shroud



1	touch points (2)	2	cooling shroud
3	guide slots (2)	4	guide screws (2)

## Installing the Cooling Shroud

To install the cooling shroud:

1. Position the cooling shroud by aligning the guide slots with the guide screws on the system-board ([Figure 12](#) on page 41).
2. Push the cooling shroud down until all edges are seated in the slots, securing the shroud to the system-board.
3. Close the appliance. See [Closing the Appliance](#) on page 30.

## Memory

Your appliance supports single and dual-rank DDR3 unbuffered ECC DIMMs (UDIMMs). DIMMs can be 1066 or 1333 MHz.

The appliance contains four memory sockets. Each two-socket set is organized into two channels. The first socket of each channel is marked with white release levers.

### General Memory Module Installation Guidelines

To ensure optimal performance of your appliance, observe the following general guidelines when configuring your appliance's memory.



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Memory configurations that fail to observe these guidelines can prevent your appliance from starting and producing any video output.

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- ◆ Except for memory channels that are unused, all populated memory channels must have identical configurations.
- ◆ Memory modules of different sizes can be mixed in sockets 1 to 4 (for example, 2 GB and 4 GB), but all populated channels must have identical configurations.

Memory modules are installed in the numeric order of the sockets beginning with 1 to 4. Your appliance supports both single channel and dual channel modes. A minimal single-channel configuration of one 1 GB memory module per processor is also supported in this mode.

[Table 5](#) on page 43 shows sample memory configurations that follow the appropriate memory guidelines stated in this section. The samples show identical memory-module configurations and their the physical and available memory totals. The table does not show mixed or quad-rank memory-module configurations, nor does it address the memory speed considerations of any configuration.

Table 5 Sample UDIMM Memory Configuration

Memory Module Size	Memory Sockets				Physical Memory (GB)
	1	3	2	4	
1 GB	X				1
	X		X		2
	X	X	X	X	4
2 GB	X				2
	X		X		4
	X	X	X	X	8
4 GB	X				4
	X		X		8
	X	X	X	X	16

## Removing Memory Modules



The memory modules and heat sink can get very hot during normal operation. Ensure that the memory modules and heat sink have had sufficient time to cool before you touch it.



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



Never operate your appliance with the cooling shroud removed. The appliance may get overheated quickly, resulting in shutdown of the appliance and loss of data.

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 system-board shroud. See [Removing the Cooling Shroud](#) on page 41.
4. Locate the memory module sockets ([Figure 21](#) on page 72).
5. Press down and out on the ejectors on each end of the socket until the memory module pops out of the socket ([Figure 13](#) on page 45).

Handle each memory module only on either card edge, making sure not to touch the middle of the memory module.

6. Replace the system-board shroud. See [Installing the Cooling Shroud](#) on page 42.
7. Close the system-board. See [Closing the Appliance](#) on page 30.
8. Reconnect the appliance and peripherals to their power sources, and power them on.

## Installing Memory Modules



---

The memory modules and heat sink can get very hot during normal operation. Ensure that the memory modules and heat sink have had sufficient time to cool before you touch it.

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

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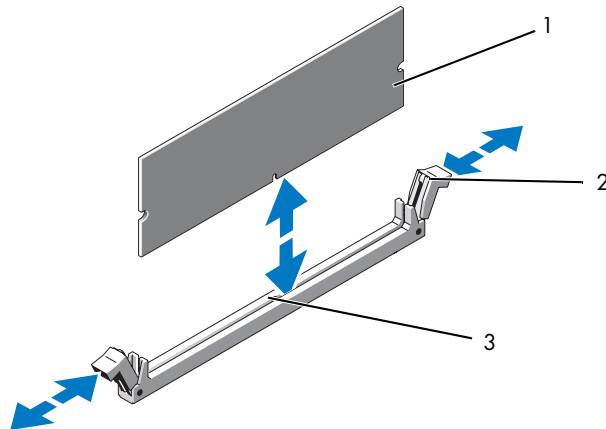
Never operate your appliance with the cooling shroud removed. The appliance may get overheated quickly, resulting in shutdown of the appliance and loss of data.

---

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 system-board shroud. See [Removing the Cooling Shroud](#) on page 41.
4. Locate the memory module sockets ([Figure 21](#) on page 72).
5. Press the ejectors on the memory module socket down and out, as shown in [Figure 13](#) on page 45, to allow the memory module to be inserted into the socket.
6. Handle each memory module only on either card edge, making sure not to touch the middle of the memory module.

Figure 13 Installing and Removing a Memory Module



1	memory module	2	memory module socket ejectors (2)
3	alignment key		

- 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.

- Press down on the memory module with your thumbs to lock the memory module into the socket.  
When the memory module is properly seated in the socket, the ejectors on the memory module socket align with the ejectors on the other sockets that have memory modules installed.
- Repeat 5 through 8 of this procedure to install the remaining memory modules. See [Table 5](#) on page 43.
- Replace the system-board shroud. See [Installing the Cooling Shroud](#) on page 42.
- Close the appliance. See [Closing the Appliance](#) on page 30.

## Cooling Fans

Your appliance contains three single-motor fans and provides cooling for the processor, expansion card, and memory modules.



Hot-swap removal or installation of the fans is not supported.



In the event of a problem with a particular fan, the fan number is referenced by the appliance's management software, allowing you to easily identify and replace the proper fan by noting the fan numbers on the fan assembly.

## Removing a Cooling Fan



The cooling fan can continue to spin for some time after the appliance has been powered down. Allow time for the fan to stop spinning before removing it from the appliance.



Do not attempt to operate the appliance without the cooling fan.



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

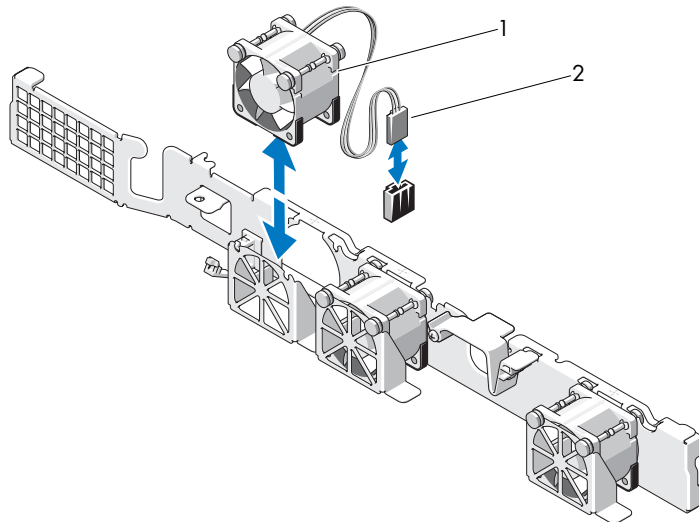


The procedure for removing each individual fan module is the same.

To remove a cooling fan:

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. Remove the cooling shroud. See [Removing the Cooling Shroud](#) on page 41.
4. Disconnect the fan's power cable from the system-board ([Figure 14](#)).
5. Remove the faulty fan by grasping the fan and sliding the fan from the fan assembly ([Figure 14](#)).

Figure 14 Removing and Installing a Fan



1	fan	2	power cable
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## Installing a Cooling Fan

To installing a cooling fan:

1. Ensure that the fan is oriented correctly.  
Orient the fan module so that the side with the power cable faces towards the back of the appliance.
2. Slide the fan module into the fan assembly until the fan is fully seated ([Figure 14](#) on page 46).
3. Connect the fan's power cable to the power connector on the system-board.
4. Replace the cooling shroud. See [Installing the Cooling Shroud](#) on page 42.
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.

## 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 system BIOS version. Contact Mirapoint Technical Support ([Getting Technical Support](#) on page 3).
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 41.



---

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. Using a #2 Phillips screwdriver, loosen one of the heat-sink retention screws ([Figure 15](#) on page 48).
6. Wait 30 seconds for the heat sink to loosen from the processor.
7. Loosen the other heat-sink retention screws.

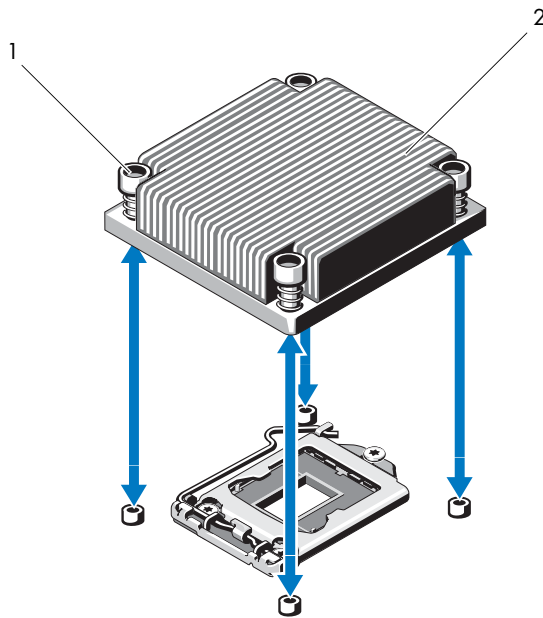
8. Gently lift the heat sink off of the processor and set the heat sink aside with thermal grease side facing up.



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.
10. Rotate the lever 90 degrees upward until the processor is released from the socket (Figure 16 on page 49).

Figure 15 Installing and Removing the Heat Sink



1	heat-sink retention screws (4)	2	heat sink
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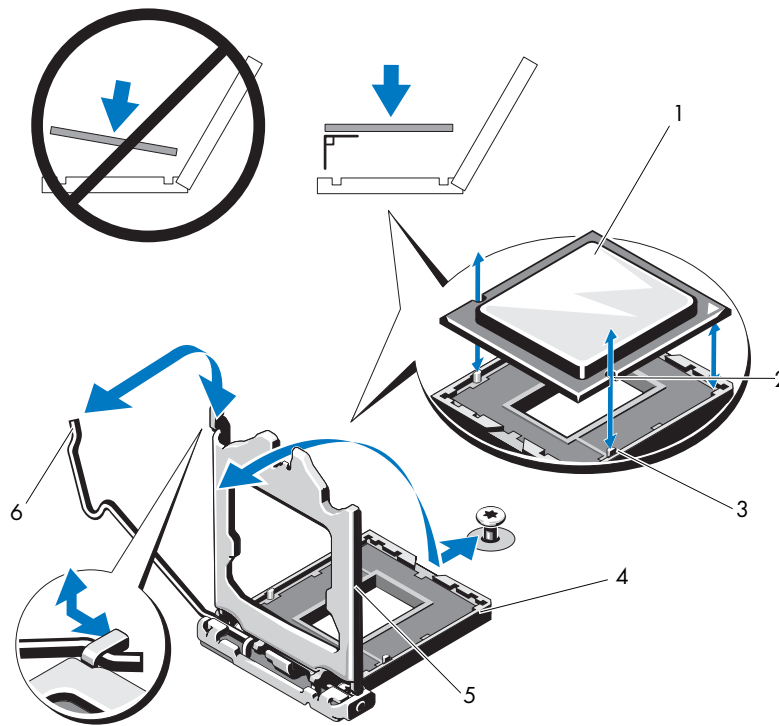
11. Rotate the processor shield upward and out of the way (Figure 16 on page 49).
12. Lift the processor out of the socket and leave the release lever up so that the socket is ready for the new processor.



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.



Figure 16 Installing and Removing a Processor



1	processor	2	notch in processor
3	socket key	4	ZIF socket
5	processor shield	6	socket-release lever

## 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.

To install a processor:

1. If you are upgrading your processor, prior to upgrading your appliance, contact your Mirapoint Support representative.
2. Unpack the processor if it has not been used previously.  
If the processor has already been used, remove any thermal grease from the top of the processor using a lint-free cloth.
3. Align the processor with the socket keys on the ZIF socket (Figure 16).



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

4. Install the processor 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.
  - b. Open the grease packet included with your processor kit and apply thermal grease evenly to the center of the top of the new processor.



---

Using excess thermal grease can cause grease to contact the processor shield, which can cause contamination of the processor socket.

---

- c. Place the heat sink on the processor ([Figure 15](#) on page 48).
  - d. Using a #2 Phillips screwdriver, tighten the heat-sink retention screws ([Figure 15](#) on page 48).
6. Replace the cooling shroud. See [Installing the Cooling Shroud](#) on page 42.
7. Close the appliance. See [Closing the Appliance](#) on page 30.
8. Reconnect the appliance to its electrical outlet and power the appliance on, including any attached peripherals.

## Power Supply

Your appliance supports a 250W power supply module.

### Removing the Power Supply

To remove the power supply:

1. Power off the appliance and all attached peripherals.
2. Disconnect the power cable from the power supply.



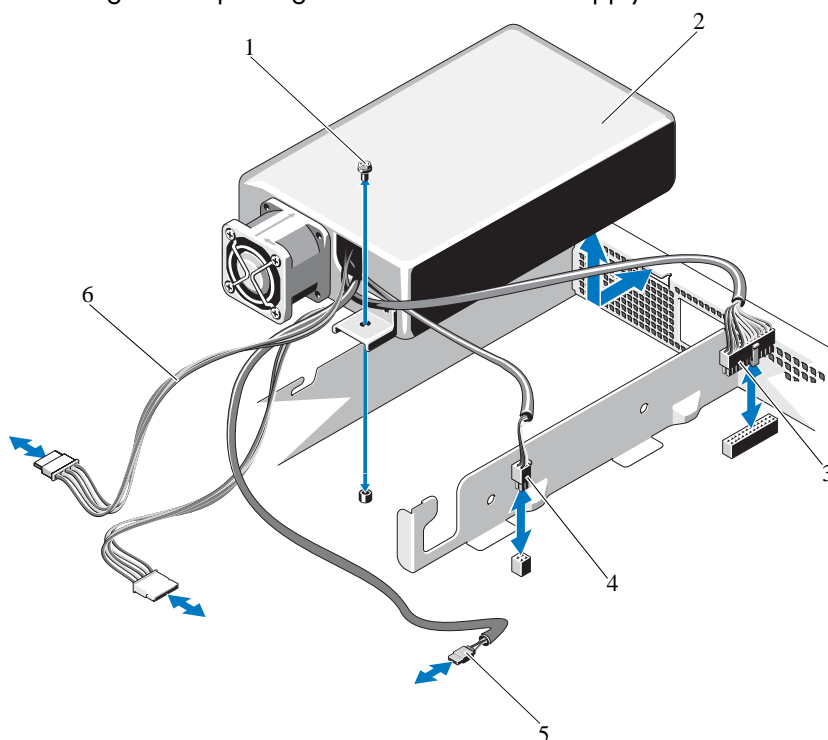
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You may have to unlatch and lift the optional cable management arm if it interferes with power-supply removal. For information about the cable management arm, see the appliance's rack documentation.

---

3. Open the appliance. See [Opening the Appliance](#) on page 30.
4. Disconnect all the power cables from the power supply to the system-board, hard drive(s), and optical drive ([Figure 17](#) on page 51).
5. Remove the screw securing the power supply to the chassis and lift the power supply to remove it from the chassis ([Figure 17](#) on page 51).

Figure 17 Removing and Replacing a Redundant Power Supply



1	screw	2	power supply
3	power cable 24 pins	4	power cable 4 pins
5	optical drive cable	6	SATA power cables (2)

## Installing the Power Supply

To install a redundant power supply:

1. Open the appliance. See [Opening the Appliance](#) on page 30.
2. Place the power supply on the chassis and align the hole on the power supply with the hole on the chassis ([Figure 17](#)).
3. Tighten the screw to secure the power supply to the chassis.
4. Connect all the power cables to the system-board, hard drive(s), and optical drive.
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.

## Removing the Power Supply Blank

If you are installing a second power supply, remove the power supply blank in bay PS2 by pulling outward on the blank.



---

To ensure proper appliance cooling, the power supply blank must be installed in power supply bay PS2 in a non-redundant configuration. Remove the power supply blank only if you are installing a second power supply.

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## Installing the Power Supply Blank



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Install the power supply blank only in power supply bay PS2.

---

To install the power supply blank, align the blank with the power supply bay and insert the blank into the chassis until it clicks into place.

## System Battery

### Removing the System Battery



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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.

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

---

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. Locate the battery socket ([Figure 21](#) on page 72).
4. Push the metal tab away from the battery until the battery pops out ([Figure 18](#) on page 53).

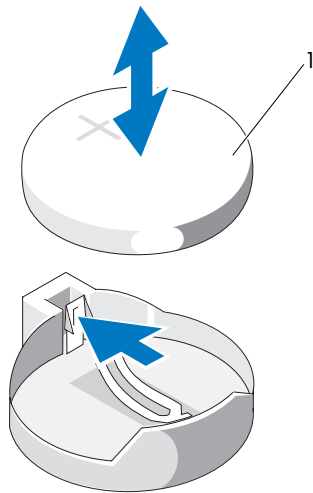


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Avoid damaging to the battery connector by firmly supporting the connector while removing a battery.

---

Figure 18 Replacing the System Battery



1	system battery		
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## Installing the System Battery

To install the system battery:

1. To install the new system battery, hold the battery with the "+" facing up, and aligned to the metal tab on the socket.
2. Press the battery straight down into the socket until it snaps into place.



Avoid damaging to the battery connector by firmly supporting the connector while installing a battery.

3. Close the appliance. See [Closing the Appliance](#) on page 30.
4. Reconnect the appliance to the electrical outlet and power the appliance on, including any attached peripherals.

## Control Panel Assembly

### Removing the Control Panel Assembly



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

To remove the control panel assembly:

1. If installed, remove the optional front bezel. See [Removing the Front Bezel](#) on page 29.

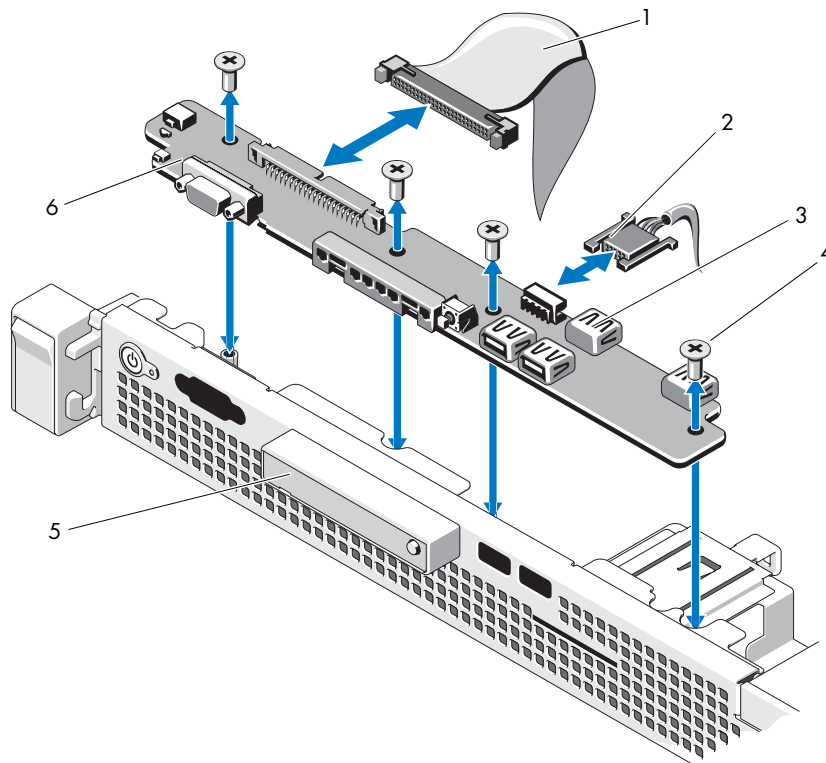
2. Power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet and peripherals.
3. Open the appliance. See [Opening the Appliance](#) on page 30.
4. Remove hard drive 0. See [Removing a Hard Drive](#) on page 33.
5. Disconnect the control panel cable at back of the control panel board.



Do not pull on the cable to unseat the connector. Doing so can damage the cable.

- a. Press the metal tabs on the ends of the cable connector.
  - b. Gently work the connector out of the socket.
  - c. Remove the USB connector cable from the control panel.
6. Remove the four screws that secure the control panel board to the chassis and remove the board.

Figure 19 Control Panel Removal



1	control panel cable	2	USB connector cable
3	USB connectors (4)	4	screws (4)
5	LED display module	6	control panel board

## Installing the Control Panel Assembly

To install the control panel assembly:

1. Align the screw holes on the control panel board with the holes on the chassis.
2. Replace the screws on the control panel assembly ([Figure 19](#) on page 54).
3. Connect the control panel cable to the control panel board.
4. Connect the USB connector cable.
5. Replace the hard drive. See [Installing a Hard Drive](#) on page 34.
6. Close the appliance. See [Closing the Appliance](#) on page 30.
7. If applicable, replace the optional front bezel. See [Removing the Front Bezel](#) on page 29.
8. Reconnect the appliance to the power source and power on the appliance and attached peripherals.

## System-Board

### Removing the System-Board



---

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

---

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 cooling shroud. See [Removing the Cooling Shroud](#) on page 41.
4. Remove any expansion cards. See [Removing an Expansion Card](#) on page 38.
5. Remove the processor heat sinks. See [Removing a Processor](#) on page 47.
6. Disconnect all cables from the system-board.
7. Remove all the memory modules and memory blanks. See [Removing Memory Modules](#) on page 43.



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To ensure proper reinstallation of memory modules, record the memory module socket locations.

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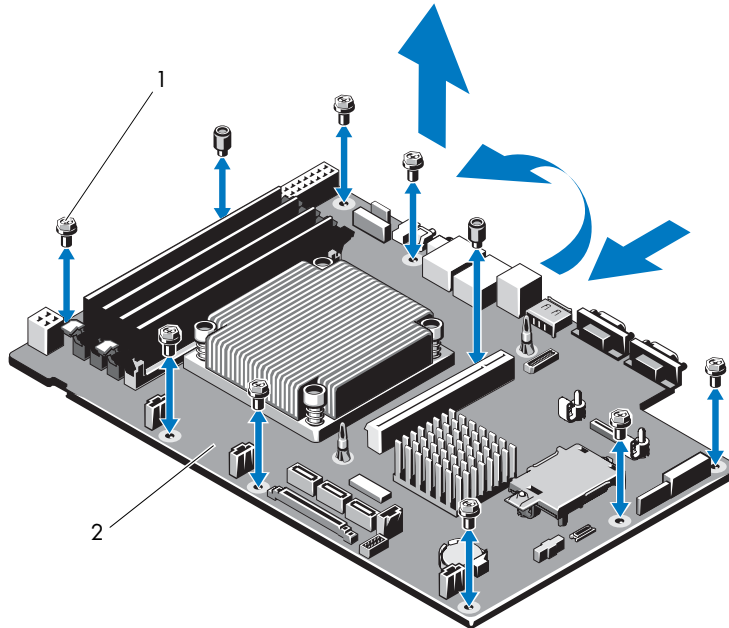
8. Remove the ten screws securing the system-board to the chassis and then slide the system-board assembly toward the front end of the chassis.



Do not lift the system-board assembly by grasping a memory module, processor, or other components.

- Grasp the system-board assembly by its edges and lift the assembly away from the chassis ([Figure 20](#)).

Figure 20 Removing and Installing the System-Board



1	screws (10)	2	system-board assembly
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## Installing the System-Board

To install the system-board:

- Unpack the new system-board.
- Remove the labels from the processor shield and affix them to the system identification panel on the front of the appliance ([Figure 1](#) on page 12).
- Holding the appliance by the edges of the system-board, lower the system-board into the chassis.

Do not lift the system-board assembly by grasping a memory module, processor, or other components.

- Slightly lift up the front of the system-board and maneuver the system-board to the bottom of the chassis until it lays completely flat.
- Push the system-board toward the back of the chassis until the board is in place.
- Tighten the ten screws that secure the system-board to the chassis ([Figure 20](#) on page 56).
- Transfer the processor and the heat sink to the new system-board. See [Removing a Processor](#) on page 47 and [Installing a Processor](#) on page 49.



8. Replace all the memory modules and memory blanks. See [Installing Memory Modules](#) on page 44.
9. Connect the cables in the order listed below (see [Figure 21](#) on page 72 for the locations of the connectors on the system-board):
  - SATA interface cable, if applicable
  - Control panel interface cable connector
  - Optical drive power cable connector
  - Control panel USB interface cable connector
  - System-board power cable connectors
10. Install the expansion card. See [Installing an Expansion Card](#) on page 37.
11. Replace the cooling shroud. See [Installing the Cooling Shroud](#) on page 42.
12. Close the appliance. See [Closing the Appliance](#) on page 30.
13. Reconnect the appliance to its electrical outlet and power the appliance on, including any attached peripherals.



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# Troubleshooting Appliance Hardware

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

- ◆ [Troubleshooting Appliance Startup Failure](#) on page 60
- ◆ [Troubleshooting External Connections](#) on page 60
- ◆ [Troubleshooting the Video Subsystem](#) on page 60
- ◆ [Troubleshooting a USB Device](#) on page 60
- ◆ [Troubleshooting a Serial I/O Device](#) on page 61
- ◆ [Troubleshooting a NIC](#) on page 61
- ◆ [Troubleshooting a Wet Appliance](#) on page 62
- ◆ [Troubleshooting a Damaged Appliance](#) on page 63
- ◆ [Troubleshooting the System Battery](#) on page 63
- ◆ [Troubleshooting a Power Supply](#) on page 64
- ◆ [Troubleshooting Appliance Cooling Problems](#) on page 64
- ◆ [Troubleshooting a Fan](#) on page 65
- ◆ [Troubleshooting Memory](#) on page 65
- ◆ [Troubleshooting an Optical Drive](#) on page 66
- ◆ [Troubleshooting a Hard Drive](#) on page 67
- ◆ [Troubleshooting Expansion Cards](#) on page 68
- ◆ [Troubleshooting the Processor](#) on page 68

## Safety First—For You and Your Appliance



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

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## Troubleshooting Appliance Startup Failure

If your appliance halts during startup prior to video imaging or LCD messaging, especially after installing a AOS release 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 42.
- ◆ For all other startup issues, note the system messages. See [Appliance Messages](#) on page 15 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 12 and [Figure 2](#) on page 13 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 3.

## Troubleshooting a USB Device

To troubleshoot a USB device:

1. Use the following steps to troubleshoot a USB keyboard and/or mouse. For other USB devices, go to 2.
  - a. Disconnect the keyboard and mouse cables from the appliance briefly and reconnect them.
  - b. Connect the keyboard/mouse to the USB port(s) 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/mouse with another working keyboard/mouse.

If the problem is resolved, replace the faulty keyboard/mouse.

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 appliance 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 3.

## 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 3.

## 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 14.
  - 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. See the NIC's documentation.
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 3.

## Troubleshooting a Wet Appliance



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

---

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. Remove the following components from the appliance. See [Chapter 2, Installing Appliance Components](#).
  - Hard drives
  - USB memory key
  - NIC hardware key
  - Expansion card and expansion-card riser
  - Power supply
  - Fans
  - Processor and heat sink
  - Memory modules
4. Let the appliance dry thoroughly for at least 24 hours.
5. Reinstall the components you removed in 3.
6. Close the appliance. See [Closing the Appliance](#) on page 30.

If the appliance does not start properly, see [Getting Technical Support](#) on page 3.

7. If the appliance starts properly, shut down the appliance and reinstall the expansion card that you removed. See [Installing an Expansion Card](#) on page 37.
8. Run the appropriate online diagnostic test.  
If the tests fail, see [Getting Technical Support](#) on page 3.

## Troubleshooting a Damaged Appliance




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

---

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 supply
  - 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 3.

## Troubleshooting the System Battery

To troubleshoot the system battery:

1. Re-enter the time and date through the System BIOS.
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 BIOS.

If the date and time are not correct in the System BIOS, replace the battery. See [System Battery](#) on page 52.



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

---

If the problem is not resolved by replacing the battery, see [Getting Technical Support](#) on page 3.

## Troubleshooting a Power Supply

To troubleshoot a power supply:

1. Reseat the power supply by removing and reinstalling it. See [Removing the Power Supply](#) on page 50 and [Installing the Power Supply](#) on page 51.



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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 power indicator turns green to signify that the power supply is functioning properly.

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2. If the problem persists, replace the faulty power supply.

If the problem persists, see [Getting Technical Support](#) on page 3.

## Troubleshooting Appliance Cooling Problems



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

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Ensure that none of the following conditions exist:

- ◆ Appliance cover, cooling shroud, drive blank, or front or back filler panel is removed.
- ◆ Ambient temperature is too high.
- ◆ External airflow is obstructed.
- ◆ Cables inside the appliance obstruct airflow.
- ◆ An individual cooling fan is removed or has failed. See [Troubleshooting a Fan](#).



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## Troubleshooting a Fan



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To troubleshoot a fan:

1. Locate the faulty fan indicated by the diagnostic software.
2. Power off the appliance and all attached peripherals.
3. Open the appliance. See [Opening the Appliance](#) on page 30.
4. Reseat the fan's power cable.
5. Restart the appliance.

If the fan functions properly, close the appliance. See [Closing the Appliance](#) on page 30.

6. If the fan does not function, power off the appliance and install a new fan. See [Cooling Fans](#) on page 45.
7. Restart the appliance.

If the problem is resolved, close the appliance. See [Closing the Appliance](#) on page 30.

If the replacement fan does not operate, see [Getting Technical Support](#) on page 3.

## Troubleshooting Memory



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Invalid memory configurations can cause your appliance to halt at startup without video output. See [General Memory Module Installation Guidelines](#) and verify that your memory configuration complies with all applicable guidelines.

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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.  
Go to 10 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. Check the memory banks and ensure that they are populated correctly. See [General Memory Module Installation Guidelines](#) on page 42.
7. Reseat the memory modules in their sockets. See [Installing Memory Modules](#) on page 44.
8. Close the appliance. See [Closing the Appliance](#) on page 30.
9. 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.
10. Power off the appliance and attached peripherals, and disconnect the appliance from the power source.
11. Open the appliance. See [Opening the Appliance](#) on page 30.
12. If a diagnostic test or error message indicates a specific memory module as faulty, swap or replace the module.
13. 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 44.
14. Close the appliance. See [Closing the Appliance](#) on page 30.
15. As the appliance boots, observe any error message that appears and the diagnostic indicators on the front of the appliance.
16. If the memory problem is still indicated, repeat 10 through 15 for each memory module installed.  
If the problem persists after all memory modules have been checked, see [Getting Technical Support](#) on page 3.

## Troubleshooting an Optical Drive



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

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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 BIOS 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 system-board. See [Optical Drive](#) on page 31.
9. Ensure that a power cable is properly connected to the drive and the system-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 3.

## Troubleshooting a Hard Drive




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

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

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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. Ensure that the required device drivers for your controller card are installed and are configured correctly. For more information, see the AOS release documentation.
3. Restart the appliance, enter the System BIOS, and verify that the drives appear in the System BIOS.

## Troubleshooting Expansion Cards



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

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

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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. Ensure that the expansion-card riser is firmly seated in its connector. See [Installing an Expansion Card](#) on page 37.
5. Ensure that the expansion card is firmly seated in its connector. See [Installing an Expansion Card](#) on page 37.
6. Close the appliance. See [Closing the Appliance](#) on page 30.
7. If the problem is not resolved, power off the appliance and attached peripherals, and disconnect the appliance from the electrical outlet.
8. Open the appliance. See [Opening the Appliance](#) on page 30.
9. Remove the expansion card. See [Removing an Expansion Card](#) on page 38.
10. Close the appliance. See [Closing the Appliance](#) on page 30.
11. Run the appropriate online diagnostic test.

If the tests fail, see [Getting Technical Support](#) on page 3.

## Troubleshooting the Processor



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

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To troubleshoot the processor:

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. Ensure that the processor and heat sink are properly installed. See [Processors](#) on page 47.
5. Close the appliance. See [Closing the Appliance](#) on page 30.
6. Run the appropriate online diagnostic test.

If the problem persists see [Getting Technical Support](#) on page 3.



# 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](#)
- ◆ [System-Board Connectors](#) on page 72
- ◆ [Disabling a Forgotten Password](#) on page 73

## System-Board Jumpers

[Figure 21](#) shows the location of the configuration jumpers on the system-board. [Table 6](#) lists the jumper settings.

Table 6 System-Board Jumper Settings

Jumper	Setting		Description
PWRD_EN		(default)	(Default) The password feature is enabled (pins 2-4)
			The password feature is disabled (pins 4-6)
NVRAM_CLR		(default)	The configuration settings are retained at appliance boot (pins 3-5)
			The configuration settings are cleared at the next appliance boot (pins 1-3)

## System-Board Connectors

See [Figure 21](#) and [Table 7](#) for the location and description of the system-board connectors.

Figure 21 System-Board Connectors

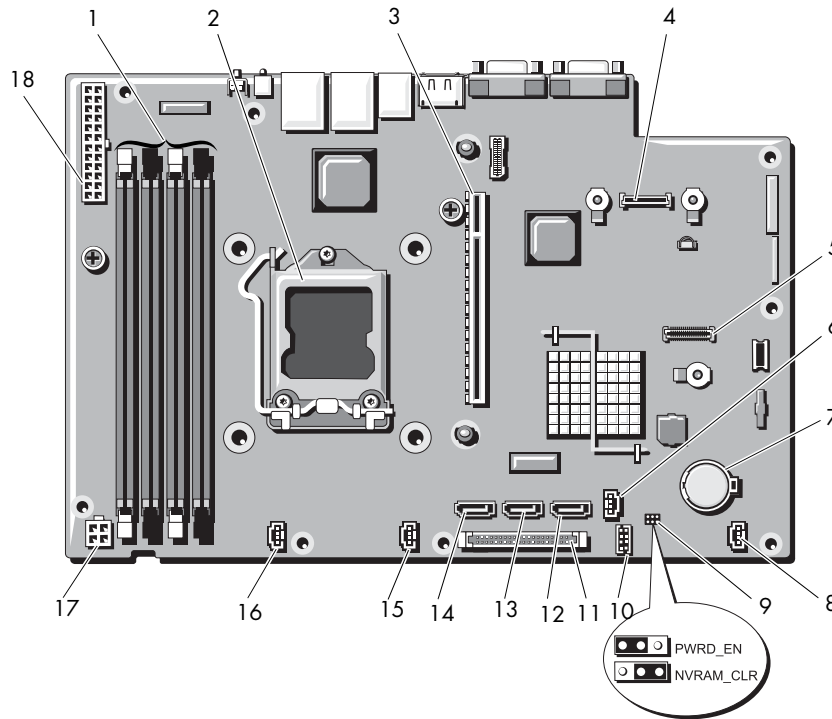


Table 7 System-Board Connectors

	Connector	Description
1	3 1 4 2	Memory module slot 3 Memory module slot 1 (white release lever) Memory module slot 4 Memory module slot 2 (white release lever)
2	CPU	Processor
3	IO_RISER1	Expansion-card riser connector
4	iDRAC6 Enterprise	iDRAC6 Enterprise card connector  <b>IMPORTANT:</b> The RS170 does not support this diagnostic card.
5	iDRAC6 Express	iDRAC6 Express card connector  <b>IMPORTANT:</b> The RS170 does not support this diagnostic card.
6	HD_ACT_CARD	Expansion-card cable connector



Table 7 System-Board Connectors (Continued)

	Connector	Description
7	Battery	Battery socket
8	FAN3	Appliance fan 3 connector
9	PWRD_EN NVRAM_CLR	Password enable jumper NVRAM clear jumper
10	USB_CONN	Internal USB connector
11	CTRL_PNL	Control panel connector
12	SATA_C	SATA connector C
13	SATA_B	SATA connector B
14	SATA_A	SATA connector A
15	FAN2	Appliance fan 2 connector
16	FAN1	Appliance fan 1 connector
17	12V	4-pin power connector
18	PWR_CONN	24-pin power connector

## Disabling a Forgotten Password

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. Remove the jumper plug from the password jumper.

See [Figure 21](#) on page 72 to locate the password jumper (labeled "PWRD\_EN") on the system-board.

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.

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.



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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.

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6. Power off the appliance, including any attached peripherals, and disconnect the appliance from the electrical outlet.
7. Open the appliance. See [Opening the Appliance](#) on page 30.
8. Install the jumper plug on the password jumper.
9. Close the appliance. See [Closing the Appliance](#) on page 30.
10. Reconnect your appliance and peripherals to their electrical outlets, and power on the appliance.

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