



CHAPTER 1

Appliance Overview and Specifications

Revised: March 3, 2008, OL-14672-01

This chapter defines components of the Cisco Security Monitoring, Analysis, and Response System (MARS) and describes the front and backplanes of the various appliance models. This chapter contains the following sections:

- [System Description, page 1-1](#)
- [Hardware Descriptions—MARS 25R, 25, 55, 110R, 110, 210, GC2R, and GC2, page 1-4](#)

System Description

Cisco Security MARS is a security threat mitigation (STM) system. It delivers a range of information about your networks' health as reported by devices in your networks. It processes raw events from your reporting devices, sessionizes¹ them across different devices, evaluates for matching inspection rules (system and user-defined), identifies false positives, and consolidates information using diagrams, charts, queries, reports, and rules.

MARS helps you be more productive by:

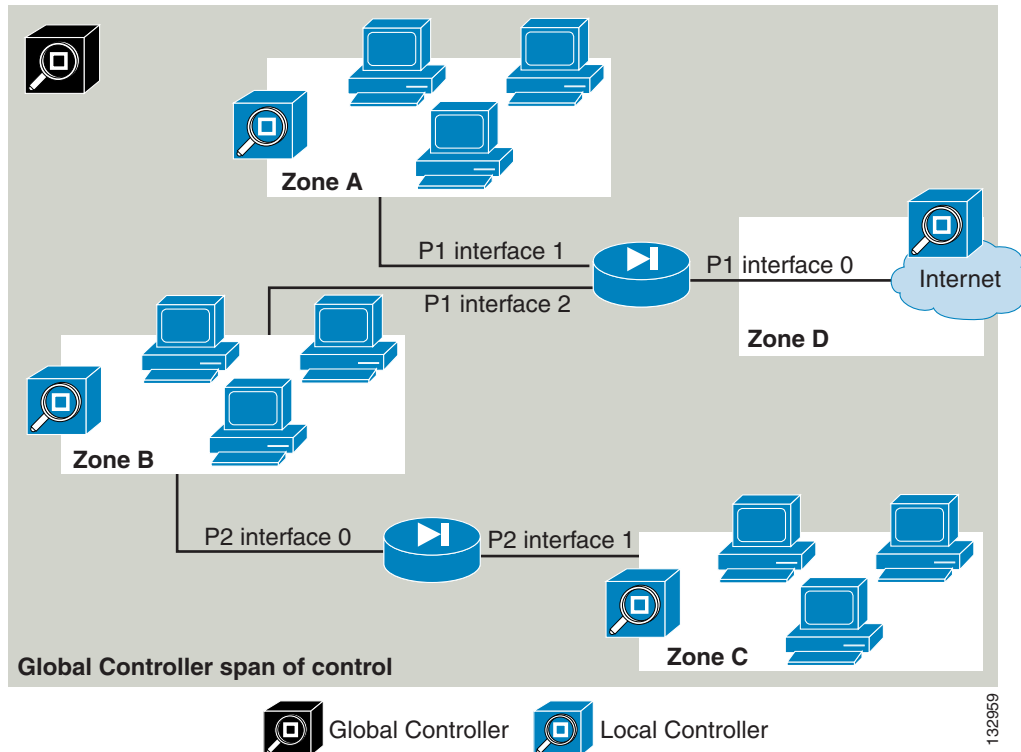
- Reducing the amount of raw data that requires manual review
- Enabling an evolving view of the network security posture
- Identifying hot spots of malicious activity
- Blocking undesirable traffic from the network

The MARS system operates at distinct and separate levels based on how much information is provided about your networks' reporting devices. At its most basic level, MARS functions as a syslog server. As you add information about reporting devices, MARS begins to sessionize the raw data, and after you configure additional reporting devices and enable the more verbose reporting features, it presents a much more comprehensive view of your network, from which you can quickly drill-down to a specific MAC address, for example.

[Figure 1-1](#) presents an example deployment of MARS, which identifies the components of the system and their relationships.

1. Sessionize refers to correlating the reported network data, logs, and events into a higher-level interpretation to identify those packets as part of a single session, or a communication, that has a beginning, a body, and an end.

Figure 1-1 Relationship of Global Controller to Local Controller to Reporting/Mitigation Device



The Cisco Security MARS system comprises the following components:

- [Local Controller, page 1-2](#)
- [Global Controller, page 1-3](#)
- [MARS Web Interface, page 1-3](#)
- [Reporting and Mitigation Devices, page 1-3](#)

Local Controller

The Local Controller models are as follows—MARS 25R, 25, 55, 110R, 110, and 210. Each model differs in its ability to process and store events from reporting devices, enabling you to accurately address your needs based on the size of your network and the traffic volume.

Local Controllers receive and pull data from reporting devices, such as firewalls, routers, intrusion detection/prevention systems, and vulnerability assessment systems. Based on the data obtained from those devices, and the level of integration with them, MARS can present you with suggested mitigation rules for detected attacks and, in some cases, push those rules to the mitigation device, which is a network device that contains the attack by restricting network access to the infected hosts.

A Local Controller summarizes information about the health of your network based on data it receives from the reporting devices that it monitors.

The Local Controller performs the following functions:

- Collects all raw events
- Sessionizes events across different devices

- Fires inspection rules for incidents
- Determines false positives
- Delivers consolidated information in diagrams, charts, queries, reports, and notifications
- Detects inactive reporting devices
- Derives set of IOS/IPS Distributed Threat Mitigation (DTM) signatures based on attacks reported by monitored CISCO IPS 5.x appliances
- Acts as a repository for the IOS/IPS DTM signatures, from which IOS/IPS devices can download current signature sets

Global Controller

If you deploy numerous Local Controllers, you can deploy a Global Controller that summarizes the findings of two or more Local Controllers. In this way, the Global Controller enables you to scale your network monitoring without increasing the management burden. The Global Controller provides a single user interface for defining new device types, inspection rules, and queries, and it enables you to manage Local Controllers under its control. This management includes defining administrative accounts and performing remote, distributed upgrades of the Local Controllers. The Global Controller is available in the following models—MARS GC2R and GC2 .

MARS Web Interface

The MARS web interface operates on a client computer. With many features common to both the Local Controller and Global Controller, the web interface uses a tabbed, hyperlinked, browser-based user interface. You access the web interface from any computer that can access the MARS Appliance on your network. For more information on client requirements, see [Web Browser Client Requirements, page 3-10](#).

From the web interface, you can perform most of your administrative functions, including all functions that are not supported at the command line. Although this manual includes procedures for initially configuring the appliance using the web interface, the following publications reference their corresponding web interface:

- *User Guide for Cisco Security MARS Local Controller*
- *User Guide for Cisco Security MARS Global Controller*

Reporting and Mitigation Devices

If you consider the MARS system from a top-down perspective, you see that the Global Controller monitors Local Controllers and that Local Controllers monitor one or more reporting devices. *Reporting devices* provide MARS with data about the network, from traffic flows, as in the case of a router, to the configuration of possible attack targets, such as from a vulnerability assessment system.

A reporting device that can deny a traffic flow is called a *mitigation device* (for example, a switch). MARS provides mitigation support in two forms:

- For supported Layer 3 devices (based on the OSI Network Model), MARS provides you with a suggested device and set of commands that can be used to halt an ongoing, detected attack. You can use this information to manually block the attack.

- For supported Layer 2 devices, MARS recommends a device, a set of commands to halt the ongoing, detected attack, and provides a method for making the configuration changes on your behalf.

How you configure your reporting devices and mitigation devices greatly affects the ability of MARS to detect ongoing attacks. You can learn more about how to configure these devices in the following:

- *User Guide for Cisco Security MARS Local Controller*
- *User Guide for Cisco Security MARS Global Controller*

For a complete list of the supported reporting and mitigating devices, see:

- *Supported and Interoperable Devices and Software for Cisco Security MARS Local Controller 4.3.x and 5.3.x*
- *Supported and Interoperable Devices and Software Versions for Cisco Security MARS Global Controller 4.3.x and 5.3.x*

Network Cable Requirements



Warning

To avoid electric shock, do not connect safety extra-low voltage (SELV) circuits to telephone-network voltage (TNV) circuits. LAN ports contain SELV circuits, and WAN ports contain TNV circuits. Some LAN and WAN ports both use RJ-45 connectors. Use caution when connecting cables.

The Ethernet connectors are designed for attaching an unshielded twisted pair (UTP) Ethernet cable equipped with standard RJ-45 compatible plugs. Press one end of the UTP cable into the Ethernet connector until the plug snaps securely into place. Connect the other end of the cable to an RJ-45 port on a hub or other device, depending on your network configuration. Observe the following cabling restrictions for 10BASE-T, 100BASE-TX, and 1000BASE-TX networks:

- For 10BASE-T networks, use Category 3 or greater wiring and connectors.
- For 100BASE-TX and 1000BASE-TX networks, use Category 5 or greater wiring and connectors.
- The maximum cable run length is 328 feet or 100 meters.

Hardware Descriptions—MARS 25R, 25, 55, 110R, 110, 210, GC2R, and GC2

The Cisco Security MARS 25R, 25, 55, 110R, 110, 210, GC2R, and GC2 appliances are built with the second generation of CS-MARS hardware, and operate with only CS-MARS software versions 5.X.

This section consists of the following subsections:

- [Technical Specifications for MARS 25R, 25, and 55, page 1-5](#)
- [Technical Specifications for MARS 110R, 110, 210, GC2, and GC2R, page 1-7](#)
- [Part Numbers, License Key, and Serial Numbers, page 1-8](#)
- [Removing and Replacing the Front Bezel, page 1-10](#)
- [MARS 25R and 25 Front and Back Panels, page 1-12](#)
- [MARS 55 Front and Back Panels, page 1-14](#)
- [Power Supply Description—MARS 25R, 25, and 55, page 1-17](#)

- [MARS 110R, 110, 210, GC2R, and GC2 Front and Back Panels, page 1-18](#)

Technical Specifications for MARS 25R, 25, and 55

[Table 1-1](#) summarizes chassis and component descriptions; [Table 1-2](#) summarizes environmental and electrical descriptions.

Table 1-1 *Technical Specifications—MARS 25R, 25, and 55*

Chassis Feature	MARS 25R and MARS 25	MARS 55
Maximum Weight	15 kg (33 lbs)	18.14 kg (40lbs)
Dimensions	Rack (1U) Height: 4.24 cm (1.67 in) Width w/o rails: 43.00 cm (16.93 in) Depth 50.80 cm (20 in)	Rack (1U) Height: 4.24 cm (1.67 in) Width w/o rails: 43.00 cm (16.93 in) Depth 64.80 cm (25.51 in)
Power Supplies	350W ATX	350W ATX
Integrated Network Controller	NIC 1—Embedded Intel 82573 E/V (Tekoa) 10/100/1000 Gigabit Ethernet Controller NIC 2—Embedded Intel 82541 PI (Tabor) 10/100/1000 Gigabit Ethernet Controller	NIC 1—Embedded Intel 82573 E/V (Tekoa) 10/100/1000 Gigabit Ethernet Controller NIC 2—Embedded Intel 82541 PI (Tabor) 10/100/1000 Gigabit Ethernet Controller
Modem	US Robotics 56k V.92 Performance Pro Modem (USR802972B-OEM)	US Robotics 56k V.92 Performance Pro Modem (USR802972B-OEM)
Hard Drive Storage	1x 250GB SATA-IO 3.0 Gps HDD 7200RPM, 16 MB Buffer	500 GB RAID 1 2x 500 SATA-IO 3.0 Gps HDD 7200RPM, 32 MB Buffer Hot-Swappable Front Accessible
DVD-ROM	Slimline optical drive	Slimline optical drive
System battery	Lithium button cell	Lithium button cell

Table 1-2 Environmental Parameters—MARS 25, 25R, and 55

Environmental Parameter	MARS 25R and MARS 25	MARS 55
Temperature range	Operating: +10°C to +35°C derated 0.5 °C for every 1,000 ft (305 m) to a maximum of 10,000 ft. The maximum rate of change not to exceed 10°C per hour Non-operating: -40° C to +70° C	Operating: +10°C to +35°C derated 0.5 °C for every 1,000 ft (305 m) to a maximum of 10,000 ft. The maximum rate of change not to exceed 10°C per hour Non-operating: -40° C to +70° C
Humidity (non-operating)	90% relative humidity, Non-condensing at +35°C	90% relative humidity, Non-condensing at +35°C
System Cooling Requirement	1,194 BTU/hour max. (350W)	1,194 BTU/hour max. (350W)
Vibration	Unpackaged: 5 Hz to 500 Hz, 2.20 g RMS random	Unpackaged: 5 Hz to 500 Hz, 2.20 g RMS random
Shock	Operating: Half sine, 2 g peak, 11 mSec Unpackaged: Trapezoidal, 25 g, velocity change 136 inches/sec Packaged: 18 inches in non-palletized free fall (>= 40 lbs to < 80 lbs)	Operating: Half sine, 2 g peak, 11 mSec Unpackaged: Trapezoidal, 25 g, velocity change 136 inches/sec Packaged: 18 inches in non-palletized free fall (>= 40 lbs to < 80 lbs)
Acoustic Noise	Sound Pressure: 55 dBA (Rack mount) in an idle state at typical office ambient temperatures Sound Power: 7.0 bels in an idle state at typical office ambient temperatures.	Sound Pressure: 55 dBA (Rack mount) in an idle state at typical office ambient temperatures Sound Power: 7.0 bels in an idle state at typical office ambient temperatures.
Electrostatic discharge (ESD)	Tested to +/-15 kilovolts (kV) with no component damage.	Tested to +/-15 kilovolts (kV) with no component damage.

Technical Specifications for MARS 110R, 110, 210, GC2, and GC2R

Table 1-3 summarizes chassis and component descriptions; Table 1-4 summarizes environmental and electrical descriptions.

Table 1-3 Technical Specifications—MARS 110R, 110, 210, GC2, and GC2R

Chassis Feature	MARS 110R and 110	MARS 210, GC2R, and MARS GC2
Maximum Weight	29.5 kg (65 lbs)	29.5 kg (65 lbs)
Dimensions	2 Rack Units (2U) Height: 87.3 mm (3.44 in) Width w/o rails: 430 mm (16.93 in) Width with rails: 451.3 mm (17.77 in) Depth: 704.8 mm (27.75 in)	2 Rack Units (2U) Height: 87.3 mm (3.44 in) Width w/o rails: 430 mm (16.93 in) Width with rails: 451.3 mm (17.77 in) Depth: 704.8 mm (27.75 in)
Power Supplies	2 X 750W Redundant (1 + 1) ATX Hot-swappable 100-240 VAC 50-60Hz	2 X 750W Redundant (1 + 1) ATX Hot-swappable 100-240 VAC 50-60Hz
Power Consumption	11A maximum @ 110 VAC 5.5A maximum @ 220 VAC	11A maximum @ 110 VAC 5.5A maximum @ 220 VAC
Integrated Network Controller	Dual Intel 82563 EB 10/100/1000 PHYs supporting Intel I/O Acceleration Technology	Dual Intel 82563 EB 10/100/1000 PHYs supporting Intel I/O Acceleration Technology
PCI NIC	Dual Port Intel Pro/1000 PT Network Controller	Dual Port Intel Pro/1000 PT Network Controller
Modem	US Robotics 56k V.92 Performance Pro Modem (USR5610B) or US Robotics 56k V.92 Performance Pro Modem (USR802972A-OEM)	US Robotics 56k V.92 Performance Pro Modem (USR5610B) or US Robotics 56k V.92 Performance Pro Modem (USR802972A-OEM)
Hard Drive Storage	1.5TB RAID 10 6 X 500GB SATA-IO 3.0 Gps HDD 7200 RPM, 16MB Buffer Hot-swappable Front accessible	2.0 TB ¹ RAID 10 6 X 750GB SATA-IO 3.0 Gps HDD 7200 RPM, 16 MB Buffer Hot-swappable Front accessible
DVD-ROM	Slimline IDE DVD-ROM	Slimline IDE DVD-ROM
System battery	Lithium button cell	Lithium button cell

1. Although there is a total of 4.5 TB storage, RAID 10 has a maximum size configuration of 2 TB Redundant, or 4 TB total

Table 1-4 Environmental Parameters—MARS 110R, 110, 210, GC2R, and GC2

Environmental Parameter	MARS 110R and MARS 110	MARS 210, GC2R, and GC2
Temperature range	Operating: +10°C to +35°C derated 0.5 °C for every 1,000 ft (305 m) to a maximum of 10,000 ft. The maximum rate of change not to exceed 10°C per hour Non-operating: -40° C to +70° C	Operating: +10°C to +35°C derated 0.5 °C for every 1,000 ft (305 m) to a maximum of 10,000 ft. The maximum rate of change not to exceed 10°C per hour Non-operating: -40° C to +70° C
Humidity (non-operating)	90% relative humidity, Non-condensing at +30°C	90% relative humidity, Non-condensing at +30°C
System Cooling Requirement	1,826 BTU/hour (535W)	1,826 BTU/hour (535W)
Vibration	Unpackaged: 5 Hz to 500 Hz, 2.20 g RMS random	Unpackaged: 5 Hz to 500 Hz, 2.20 g RMS random
Shock	Operating: Half sine, 2 g peak, 11 mSec Unpackaged: Trapezoidal, 25 g, velocity change 136 inches/sec Packaged: 18 inches in non-palletized free fall (>= 40 lbs to < 80 lbs)	Operating: Half sine, 2 g peak, 11 mSec Unpackaged: Trapezoidal, 25 g, velocity change 136 inches/sec Packaged: 18 inches in non-palletized free fall (>= 40 lbs to < 80 lbs)
Acoustic Noise	Sound Pressure: 55 dBA (Rack mount) in an idle state at typical office ambient temperatures Sound Power: 7.0 bels in an idle state at typical office ambient temperatures.	Sound Pressure: 55 dBA (Rack mount) in an idle state at typical office ambient temperatures Sound Power: 7.0 bels in an idle state at typical office ambient temperatures.
Electrostatic discharge (ESD)	Tested to 15 kilovolts (kV) with no component damage.	Tested to 15 kilovolts (kV) with no component damage.

Part Numbers, License Key, and Serial Numbers

The part numbers of Cisco Security MARS Appliances and the Field Replaceable Units (FRUs) that operate with software releases 5.X are as follows:

Local Controller Appliances

- CS-MARS-25R-K9
- CS-MARS-25-K9
- CS-MARS-55-K9
- CS-MARS-110R-K9
- CS-MARS-110-K9
- CS-MARS-210-K9

Global Controller Appliances

- CS-MARS-GC2R-K9
- CS-MARS-GC2-K9

FRU Description	FRU Part Number
SR2500 (Driskill 2) 750 Watt Power Supply Module (MARS 110R, 110, 210, GC2R, GC)	CS-MARS-D750-PS =
500 GB SATA-IO HDD (MARS 55)	CS-MARS-H500-HD =
500 GB SATA-IO HDD (MARS 110R, 110)	CS-MARS-S500-HD =
750 GB SATA-IO HDD (MARS 210, GC2R, GC)	CS-MARS-S750-HD =
RAID Controller Back-Up Battery Unit (MARS 110R, 110, 210, GC2R, GC)	CS-MARS-X10-BB =
Rack-mount Kit (MARS 110R, 110, 210, GC2R, GC)	CS-MARS-X10-RAIL=

Serial Numbers

If you have difficulty identifying or physically locating the serial number sticker on your appliance chassis, use the Cisco Product Identification Tool at the following URL:

<http://tools.cisco.com/Support/CPI/index.do>

You must be registered with Cisco Systems Customer Connection Online to access this tool. If you are not registered, you can register at the following URL:

<http://tools.cisco.com/RPF/register/register.do>

The chassis, hard drive, and power supply serial numbers are also reported in the **show inventory** CLI command.

License Key

See the section, [Licensing the Appliance](#), in the [Initial Appliance Configuration](#) chapter of this Installation and Setup Guide.

Evaluation (Demo) License Key

In circumstances where you are evaluating equipment on loan from Cisco, you can generate your own temporary license key.

To obtain a 60-day demo license key, complete the registrant information form at the following URL (you must log in with your Cisco CCO credentials):

<https://tools.cisco.com/SWIFT/Licensing/PrivateRegistrationServlet?FormId=240>

Your Cisco Demo License key will be sent within 1 hour to the email address specified in the form.

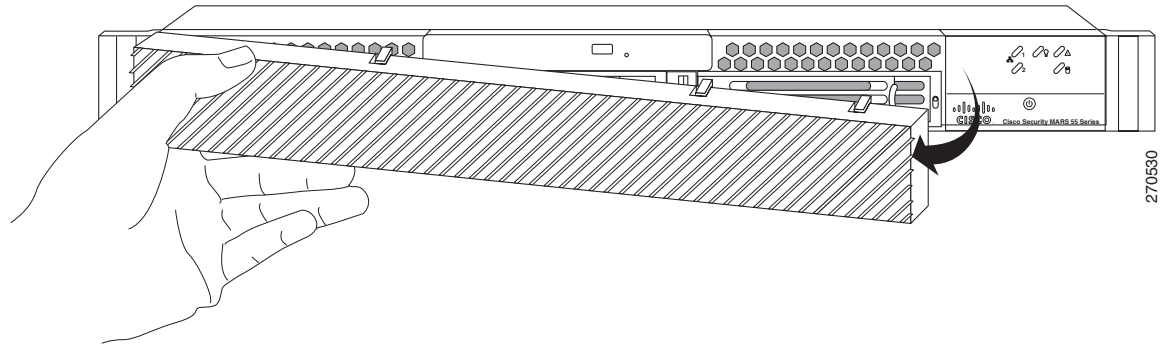
Removing and Replacing the Front Bezel

For the MARS 55, 110R, 110, 210, GC2R, and GC2, you must remove the front bezel to access the DVD ROM, hard drives, and control panel buttons. The bezels do not lock. The MARS 25R and 25 front panel features are accessible without removing the bezel.

MARS 55

To remove the MARS 55 bezel, support the left-side hinge with your hand, as shown in [Figure 1-2](#). Pull the bezel from the right-hand side, swing open, then gently detach left-hand side from hinge.

Figure 1-2 Removing the Front Bezel from a MARS 55

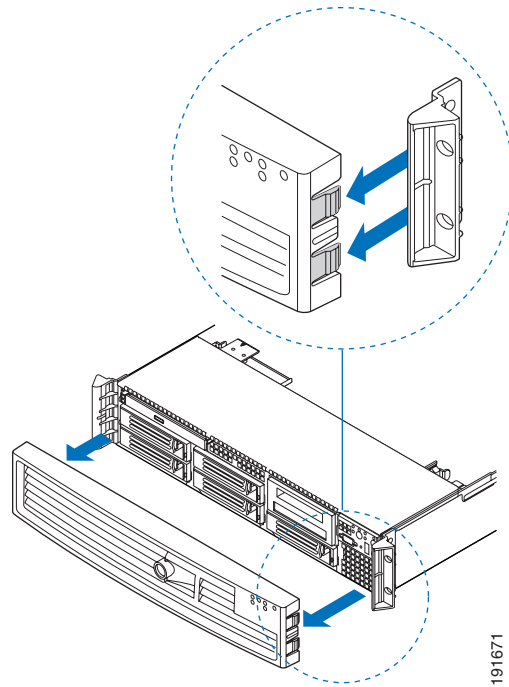


MARS 110, 110R, 210, GC2R, and GC2

To remove the bezel from the, pull the bezel from the appliance, as shown in [Figure 1-3](#).

To replace the bezel, line up the center notch on the bezel with the center guide on the rack handles, then push the bezel onto the front of the MARS Appliance until it clicks into place.

Figure 1-3 Removing the Front Bezel from a MARS 110R, 110, 210, GC2, and GC2R



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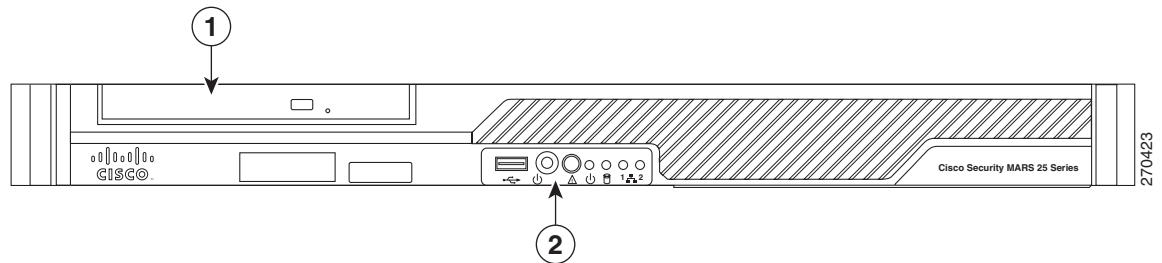
MARS 25R and 25 Front and Back Panels

Front Panel Features—MARS 25 and 25R

The front panel elements are shown in [Figure 1-4](#) and described in the following subsections:

- [Control Panel Description—MARS 25R and 25, page 1-12](#)
- [Control Panel LED Descriptions—MARS 25R and 25, page 1-13](#)

Figure 1-4 Front Panel—MARS 25R and 25

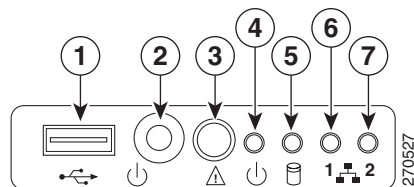


1	Slimline Optical DVD drive	2	Control Panel
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Control Panel Description—MARS 25R and 25

The control panel power button and status LEDs are supported. [Figure 1-5](#) shows the layout and functions of the control panel.

Figure 1-5 Control Panel Elements—MARS 25R and 25



1	USB Port 2 (not supported)	2	Power On/Off Button
3	Not used	4	System Power LED
5	Hard Drive Activity LED	6	NIC 1 LED
7	NIC 2 LED		

Control Panel LED Descriptions—MARS 25R and 25

Table 1-5 describes the function of control panel LEDs.

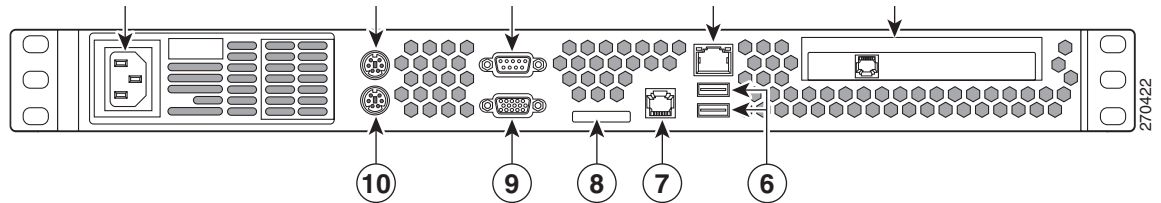
Table 1-5 Control Panel LEDs—MARS 25R and 25

Figure 1-5 Reference Number	Control Panel LED	State Description
3	Not used	
4	Power On/Off LED	Steady Green —Legacy power on Blinking Green —Sleep state (not supported) Off —Power is off.
5	Hard Drive LED	Random blinking —Indicates disk activity Off —No disk activity
6	NIC 1 LED	Steady Green —NIC has link
7	NIC 2 LED	Blinking Green —NIC Activity

Back Panel Features—MARS 25R and 25

Figure 1-6 depicts the back panel of the MARS 25R, 25, and 55 appliances.

Figure 1-6 Back Panel—MARS 25R, 25, and 55



1	AC Power Connector	2	PS2 Mouse Port
3	DB9 Serial Port	4	NIC 1 or eth0 (10/100/1000 Mps)
5	Modem	6	USB Ports 0 and 1 (not supported)
7	NIC 2 or eth1 (10/100/1000 Mps)	8	Diagnostic LEDs (4) ¹
9	VGA Video Connector	10	PS2 Keyboard Port

1. Used by Technical Assistance Center for troubleshooting.

MARS 55 Front and Back Panels

Front Panel Features—MARS 55

The front panel elements are shown in [Figure 1-8](#) and described in the following subsections:

- [Control Panel Description—MARS 55, page 1-15](#)
- [Control Panel LED Descriptions—MARS 55, page 1-15](#)

Figure 1-7 Front Panel—MARS 55 with Bezel

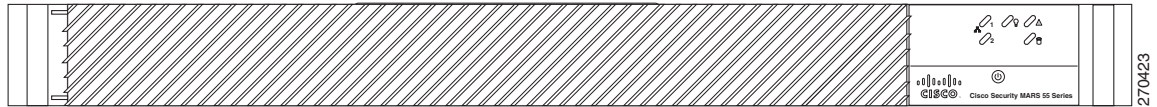
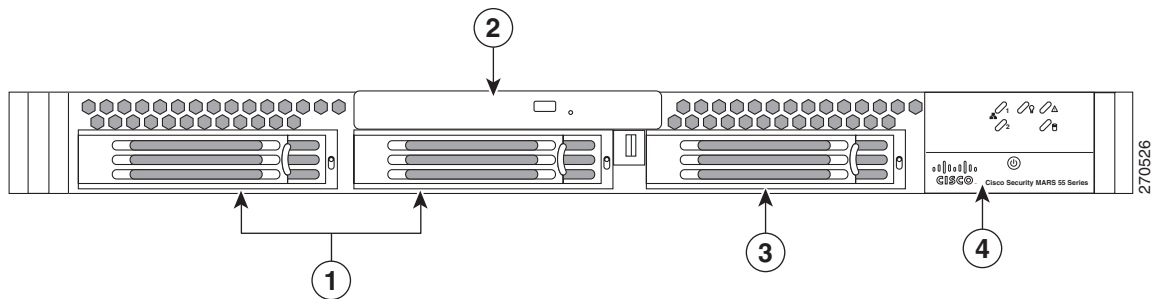


Figure 1-8 Front Panel—MARS 55 with Bezel Removed



1	Hard drives	2	Slimline Optical DVD drive
3	Empty Hard Drive Bay with Spare Carrier	4	Control Panel



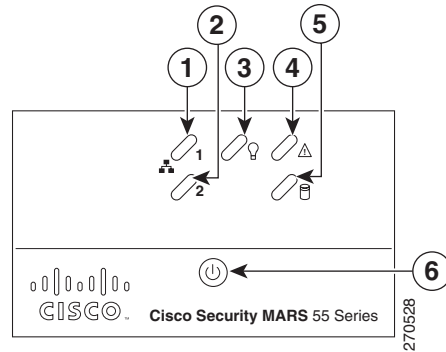
Note

To maintain the proper air pressure within the system, all hard drive bays must be populated with either a hard drive, or a drive blank.

Control Panel Description—MARS 55

The MARS 55 control panel has a power button and status LEDs. [Figure 1-9](#) shows the layout and functions of the control panel.

Figure 1-9 Control Panel Elements—MARS 55



1	NIC 1 LED	2	NIC 2 LED
3	System Power LED	4	Not used
5	Hard Drive Activity LED	6	Power On/Off Button

Control Panel LED Descriptions—MARS 55

[Table 1-6](#) describes the function of control panel LEDs.

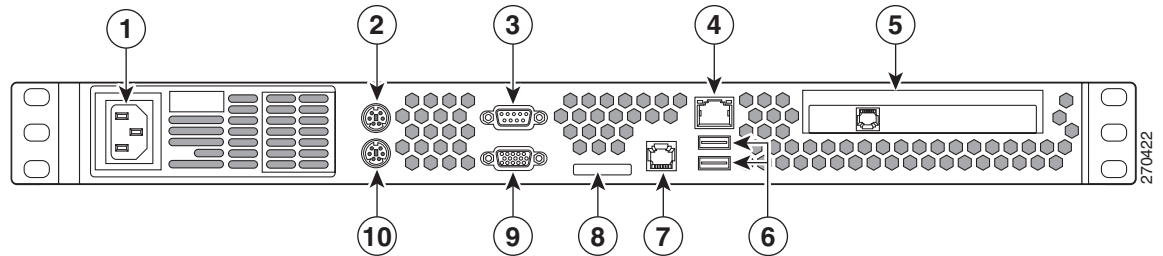
Table 1-6 Control Panel LEDs—MARS 55

Figure 1-9 Reference Number	Control Panel LED	State Description
1	NIC 1 LED	Steady Green —NIC has link
2	NIC 2 LED	Blinking Green —NIC Activity
3	Power On/Off LED	Steady Green —Legacy power on Blinking Green —Sleep state (not supported) Off —Power is off.
4	Not used	
5	Hard Drive LED	Random blinking —indicates disk activity Off —No disk activity

Back Panel Features—MARS 55

Figure 1-10 depicts the back panel of the MARS 55 appliance.

Figure 1-10 Back Panel—MARS 25R, 25, and 55

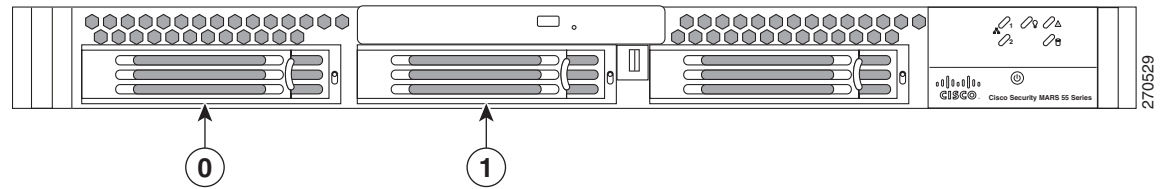


1	AC Power Connector	2	PS2 Mouse Port
3	DB9 Serial Port	4	NIC 1 or eth0 (10/100/1000 Mbps)
5	Modem	6	USB Ports 0 and 1 (not supported)
7	NIC 2 or eth1 (10/100/1000 Mbps)	8	Diagnostic LEDs (4) ¹
9	VGA Video Connector	10	PS2 Keyboard Port

1. Used by Technical Assistance Center for troubleshooting.

Hard Drive Slot Number Layout—MARS 55

Figure 1-11 Hard Drive Slot Numbers



MARS Appliance	Storage Capacity ¹	Hard Drive Slot to PD Numbers	RAID 1 Pairs
MARS 55	500GB RAID 1 2 X 500GB SATA-IO 3.0 Gps HDD 7200 RPM, 32 MB Buffer Hot-Swappable Front Accessible	Slot 0 is Port 0 Slot 1 is Port 1	Slot 0 and Slot 1

1. The stated storage capacity is the sum of the rated capacity of all the hard drives and does not reflect bytes reserved for the RAID overhead on each drive.

Power Supply Description—MARS 25R, 25, and 55

The MARS 25R, 25, and 55 have a 350 watt ATX power supply (PS) with the following features:

- Over-temperature protection (OTP)
- Over-current protection (OCP)
- Over-voltage protection (OVP)

Over-Temperature Protection (OTP)

The power supply is protected against over-temperature conditions caused by loss of fan cooling or excessive ambient temperature. In an OTP condition the power supply will shutdown. When the power supply temperature drops to the rated safety limit, the power supply restores power automatically, while a 5 V standby remains constantly on. The power supply alerts the system of the OTP condition with the power supply FAIL signal and the Power LED on the control panel.

Over-Current Protection (OCP)

The power supply and power distribution board shutdown and latch off after an over-current condition occurs. This latch is cleared by an AC power interruption.

Over-Voltage Protection (OVP)

The power supply and power distribution board shutdown and latch off after an over-voltage condition occurs. This latch is cleared by an AC power interruption.

AC Power Source Requirements

The power supply operates within the parameters listed in [Table 1-7](#).

Table 1-7 MARS 25R, 25, and 55 Power Maximums and Minimums

Parameter	110 Line Voltage	220 Line Voltage
Minimum	90 V ^{rms}	180 V ^{rms}
Rated	100–127 V ^{rms}	200–240 V ^{rms}
Maximum	140 V ^{rms}	264 V ^{rms}
Start-up VAC	85 VAC +/- 4 VAC	
Power Off VAC	75 VAC +/- 5 VAC	
Maximum Input AC Current ¹	6.0 A ^{rms}	3.0 A ^{rms}
Frequency	Minimum: 47 Hz; Rated: 50/60 Hz; Maximum: 63 Hz	

1. Maximum input current value is measured at maximum load and minimum voltage (90VAC for 110 line voltage, 180VAC for 220 line voltage).

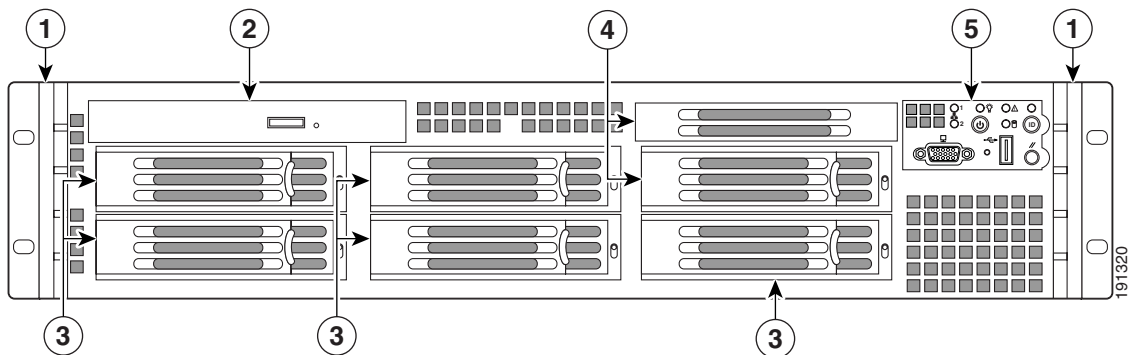
MARS 110R, 110, 210, GC2R, and GC2 Front and Back Panels

Front Panel Features—MARS 110R, 110, 210, GC2R, and GC2

The front panel elements are shown in [Figure 1-12](#) and described in the following subsections:

- [Control Panel Description—MARS 110R, 110, 210, GC2R, and GC2, page 1-19](#)
- [Control Panel LED Descriptions—MARS 110R, 110, 210, GC2R, and GC2, page 1-21](#)

Figure 1-12 Front Panel of MARS 110R, 110, 210, GC2R, and GC2—with Bezel Removed



1	Rack Handles	2	Slim-Line DVD-ROM
3	Hard Drive Bays (5 total)	4	Flex Bay—MARS uses the Flex Bay as the 6th hard drive.
5	Standard Control Panel		



Note The USB ports on the front and back panels are not supported.

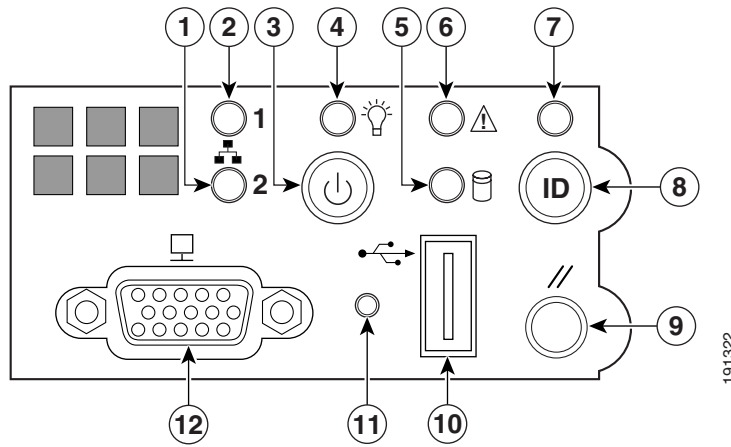


Note To maintain the proper air pressure within the system, all hard drive bays must be populated with either a hard drive, or a drive blank.

Control Panel Description—MARS 110R, 110, 210, GC2R, and GC2

The standard control panel supports several push buttons and status LEDs. [Figure 1-13](#) shows the layout and functions of the control panel. The Universal Serial Bus (USB) port is not supported.

Figure 1-13 Control Panel Elements—MARS 110R, 110, 210, GC2R, and GC2



1	NIC 2 activity LED	2	NIC 1 activity LED
3	Power on/off button—Toggles the system power on and off. Use for hard power-downs when a software shut down cannot be performed.	4	Power LED
5	Hard drive activity LED	6	System status LED

7	System Identification LED—Toggles the front and rear panel System ID LEDs on/off enabling you to more easily locate the appliance from behind a rack.	8	System identification button
9	System Reset button—Reboots and initializes the system. Use for system restarts and initialization when a software reboot cannot be performed. Data in memory is lost, but RAID cache data is preserved.	10	USB 2.0 Connector (Not supported)
11	Recessed Non-maskable Interrupt (NMI) Button (Tool Required)—Diagnostic function used by Cisco TAC	12	VGA video-out connector—Standard VGA video-out connector. Attach an external monitor and a keyboard to the appliance to access the command line interface. It cannot be used at the same time as the back panel VGA connector.

Control Panel LED Descriptions—MARS 110R, 110, 210, GC2R, and GC2

Table 1-8 describes the function of control panel LEDs.

Table 1-8 Control Panel LEDs—MARS 110R, 110, 210, GC2R, and GC2


Control Panel LED	Figure 1-13 Reference Number	State Description
NIC 1 or NIC 2 LED	2, 1	Steady Green —NIC has link Blinking Green —NIC Activity
Power On/Off LED	4	Steady Green —Legacy power on Blinking Green —Sleep state (not supported) Off —Power is off.
System Identification LED	7	 Note This LED is also on the back panel Solid Blue —Blue identification LEDs are on Off —Blue identification LEDs are off

Table 1-8 Control Panel LEDs—MARS 110R, 110, 210, GC2R, and GC2


Control Panel LED	Figure 1-13 Reference Number	State Description
System Status LED	6	 <p>Note This LED is also on the back panel</p> <p>Alternating Green and Amber Blink—Pre-DC 5V standby power is on. There are 15–20 seconds of system initialization when AC is applied to the appliance. The control panel buttons are disabled until initialization is complete.</p> <p>Solid Green—System booted and ready</p> <p>Blinking Green—Degraded system, may be due to the following:</p> <ul style="list-style-type: none"> • Cannot use some of the installed memory • Redundancy loss such as a power-supply or a fan • CPU failed or disabled • Fan alarm or fan failure. The number of operational fans should be more than the minimum number required to cool the system • Non-critical threshold crossed such as temperature or voltage. <p>Solid Amber—Fatal alarm, the system has failed or shutdown possibly due to one of the following conditions:</p> <ul style="list-style-type: none"> • DIMM failure • Run-time memory uncorrectable error in non-redundant mode • IERR signal asserted • Processor 1 missing • Temperature threshold crossed • Power fault • Processor configuration error <p>Blinking Amber—Non-fatal alarm but system is likely to fail possibly due to one of the following conditions:</p> <ul style="list-style-type: none"> • Critical voltage threshold crossed • Minimum number of fans to cool the system failed or not present <p>Off—POST is running or system is off</p>

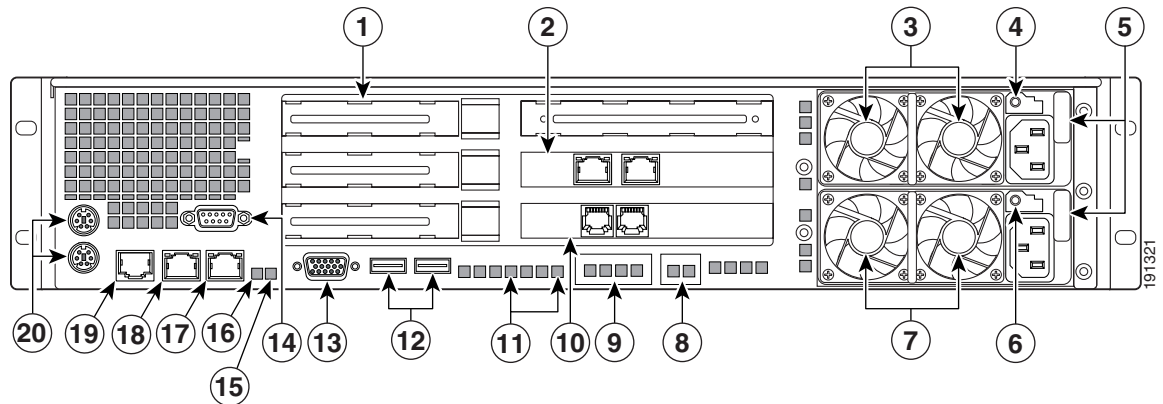
Table 1-8 Control Panel LEDs—MARS 110R, 110, 210, GC2R, and GC2

Control Panel LED	Figure 1-13 Reference Number	State Description
Hard Drive LED	5	Random blinking—indicates disk activity Off—No disk activity

Back Panel Features—MARS 110R, 110, 210, GC2R, and GC2

Figure 1-14 depicts the back panel of the MARS 110R, 110, 210, GC2R, and GC2 appliances.

Figure 1-14 Back Panel—MARS 110R, 110, 210, GC2R, and GC2



1	(Not supported). Low Profile Add-in Slots for PCIe Cards	2	(Not supported). Add-in 10/100/1000 Network Interface Card
3	Fans—Upper Power Supply Module	4	LED and power receptacle for the upper power supply module
5	Power supply locking levers	6	LED and power receptacle for the lower power supply module
7	Fans—Lower Power Supply Module	8	(Not supported). Intel® I/O Expansion Module bay
9	(Not supported). Intel® Remote Management Module NIC bay	10	56K modem (Line In and Telephone connectors)
11	POST Progress LEDs (4)	12	(Not supported). USB port 5 and USB port 6
13	VGA Video-out connector	14	DB-9 Serial A connector
15	Blue System Identification LED	16	System Status LED
17	Integrated NIC 2 (eth1-10/100/1000 Mbps)	18	Integrated NIC 1 (eth0-10/100/1000 Mbps)
19	RJ45 Serial B connector	20	PS/2 keyboard and mouse connectors

Connector Descriptions

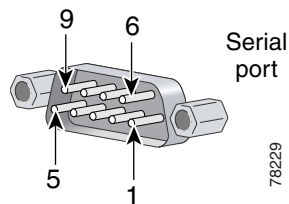
Table 1-9 describes the type and function of the back panel communication ports of the MARS 110R, 110, 210, GC2R, and GC2.

Table 1-9 Communication Port Descriptions—MARS 110R, 110, 210, GC2R, and GC2

Connector	Description
DB-9 Serial	Table 1-10 lists the pin number assignments for the 9-pin D-subminiature serial port connector.
RJ-45 Serial	Table 1-11 lists the pin numbers assignments for the RJ-45 serial port connector.
Modem Line-in	The MARS Appliance has a V.90 modem for sending SMS and pager alerts. Connect the line-in port to the wall jack using the provided standard telephone cable (RJ-11 connectors).
Modem External Telephone	You can connect a POTS telephone to the telephone port with a standard telephone cable (RJ-11 connectors).
VGA Port	Connect a monitor to this standard VGA port, and a keyboard to the keyboard port to view the console logs and to access the command line interface. It cannot be used at the same time as the Front Panel VGA connector.
Keyboard	PS/2 keyboard connector. To access the console logs, or the command line interface connect a keyboard to the keyboard connector and a monitor to the VGA port.
Mouse	PS/2 mouse port. Not supported.
USB Ports (0 and 1)	Not supported.

Table 1-9 Communication Port Descriptions—MARS 110R, 110, 210, GC2R, and GC2

Connector	Description
Ethernet Add-in NIC connectors	Not supported.
Integrated Ethernet NIC connectors (eth0 and eth1)	<p>10/100/1000–megabit-per-second (Mbps) autosensing Ethernet ports (autosensing detects line speed and duplex mode). MARS supports the operation of both Ethernet connectors. Table 1-8 lists LED descriptions. NIC 1 is eth0 and NIC 2 is eth1.</p> <p>Each Ethernet connector provides all the functions of a network expansion card and supports the 10BASE-T, 100BASE-TX, and 1000BASE-TX Ethernet standards.</p> <p>The MARS Appliance monitors network traffic destined to the IP address assigned to eth0. The eth0 connector is the port to which the gateway command applies. Therefore, eth0 must be attached to the network from which the reporting devices are accessible. The eth1 connector is typically used as an out-of-band management network, which provides faster graphical user interface (GUI) response to the administrator. To use eth1, you must define static routes to the destination networks for that interface.</p>

Figure 1-15 Pin Numbers for the Serial Port Connector**Table 1-10** DB-9 Serial Port Pin-outs

Pin	Signal Name	Description
1	SPA_DCD	DCD (Carrier Detect)
2	SPA_DSR	DSR (Data Set Ready)
3	SPA_SIN_L	RXD (Receive Data)
4	SPA_RTS	RTS (Request to Send)
5	SPA_OUT_N	TXD (Transmit Data)
6	SPA_CTS	CTS (Clear to Send)
7	SPA_DTR	DTR (Data Terminal Ready)
8	SPA_RI	RI (Ring Indicate)
9	GND	Ground

Table 1-11 RJ-45 Serial Port Pin-outs

Pin	Signal Name	Description
1	SPB_RTS	RTS (Request to Send)
2	SPB_DTR	DTR (Data Terminal Ready)
3	SPB_OUT_N	TXD (Transmit Data)
4	GND	Ground
5	SPA_RI	RI (Ring Indicate)
6	SPA_SIN_N	RXD (Receive Data)
7	SPB_DSR	DSR (Data Set Ready)
8	SPB_CTS	CTS (Clear to Send)

Table 1-12 Back Panel LED Descriptions

Back Panel LED	Figure 1-14 Reference Number	Activity Description
Power supply LEDs	4	See Power Supply LED Descriptions, page 1-29
POST Progress LEDs	10	Used by Cisco TAC for diagnostic purposes
System Identification LED	14	See Table 1-8
System Status LED	15	See Table 1-8 .
Integrated NIC LEDs	17, 18	<p>Left LED</p> <ul style="list-style-type: none"> • Off—No network connection • Solid Amber—Network connection in place • Blinking Amber—Transmit/receive activity <p>Right LED</p> <ul style="list-style-type: none"> • Off—10 Mbps connection (if left LED is active) • Solid Amber—100 Mbps connection • Solid Green—1000 Mbps connection

Hard Drive Layout

Figure 1-16 Hard Drive Slot Numbers—MARS 110R, 110, 210, GC2R, and GC2

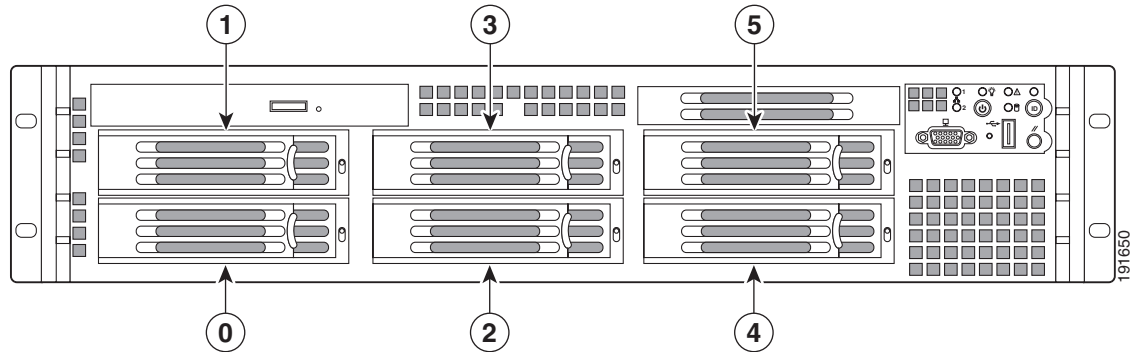


Table 1-13 Hard Drive Slot Number to CLI PD number—MARS 110R, 110, 210, GC2R, and GC2

MARS Appliance	Storage Capacity ¹	Hard Drive Slot to PD Numbers	RAID 1 Pairs
MARS 110R, 110	1.5TB RAID 10 Hot-swappable Front accessible 6 X 500GB SATA-IO HDD, Seagate Barracuda ES 3 TB 3.0Gps, 7200 RPM, 16MB Buffer	Slot 0 is p0 Slot 1 is p1 Slot 2 is p2 Slot 3 is p3 Slot 4 is p4 Slot 5 is p5	Slot 0 and Slot 1 Slot 2 and Slot 3 Slot 4 and Slot 5
MARS 210, GC2R, GC2	2.0TB ² RAID 10 Hot-swappable Front accessible 6 X 750GB SATA-IO HDD, Seagate Barracuda ES 3 TB 3.0Gps, 7200 RPM, 16MB Buffer		

1. The stated storage capacity is the sum of the rated capacity of all the hard drives and does not reflect bytes reserved for the RAID overhead on each drive.
2. Although there is a total of 4.5 TB storage, RAID 10 has a maximum size configuration of 2 TB Redundant, or 4 TB

Redundant Power Supply Descriptions

The MARS 110R, 110, 210, GC2R, and GC2 ship with two hot-swappable 750 watt redundant (1 + 1) ATX power supplies (PS) which have the following integrated management features:

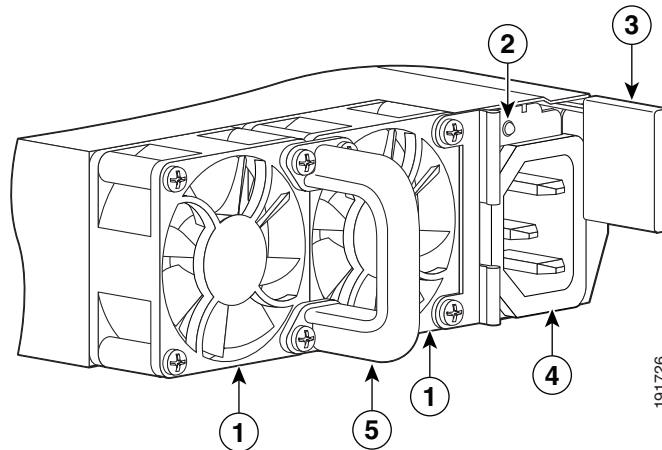
- Status LED on each power module
- Over-temperature protection (OTP)
- Over-voltage protection (OVP)

For procedures on hotswapping a power supply, see [Chapter 26, “Hot-swapping a Power Supply Unit.”](#)

**Caution**

On a 20 amperes AC outlet, no more than a total of four (4) systems should be connected to a single outlet at any time.

Figure 1-17 Power Supply Module—MARS 110R, 110, 210, GC2R, and GC2



1	Integrated fan	2	Status LED
3	Retaining clip	4	AC power socket
5	Pull handle		

Over-Temperature Protection (OTP)

The power supply is protected against over-temperature conditions caused by loss of fan cooling or excessive ambient temperature. In an OTP condition the power supply will shutdown. When the power supply temperature drops to the rated safety limit, the power supply restores power automatically, while the 5 V standby remains constantly on. The power supply alerts the system of the OTP condition with the power supply FAIL signal and the Power LED on the control panel.

Over-Current Protection (OCP)

The power supply and power distribution board shutdown and latch off after an over-current condition occurs. This latch is cleared by an AC power interruption.

Over-Voltage Protection (OVP)

The power supply and power distribution board shutdown and latch off after an over-voltage condition occurs. This latch is cleared by an AC power interruption.

AC Power Source Requirements

Each power supply has a socket to accommodate an AC power cord. Each power supply operates within the parameters listed in [Table 1-14](#).

Table 1-14 Power Supply Maximums and Minimums—MARS 110R, 110, 210, GC2R, and GC2

Parameter	110 Line Voltage	220 Line Voltage
Minimum	90 V ^{rms}	180 V ^{rms}
Rated	100–127 V ^{rms}	200–240 V ^{rms}
Maximum	140 V ^{rms}	264 V ^{rms}
Start-up VAC	85 VAC +/- 4 VAC	
Power Off VAC	75 VAC	
Maximum Input AC Current ¹	12.0 A ^{rms}	6.0 A ^{rms}
Maximum Rated Input AC Current ²	11.0 A ^{rms}	5.5 A ^{rms}
Frequency	Minimum: 47 Hz; Rated: 50/60 Hz; Maximum: 63 Hz	

1. Maximum input current at low input voltage range is measured at maximum load—minimums are 90VAC for a 110 Line, and 180VAC for a 220 Line.
2. Maximum rated input current is measured at 100VAC and 200VAC.

Power Supply LED Descriptions

Each power supply module has a two-color Amber/Green LED to indicate power supply status.

- **Solid amber**—Indicates no AC power for this power supply unit only, or there is a power supply critical event causing a shutdown. For instance, a general failure, a blown fuse, an over-current protection event, an over-voltage protection event, or a fan failure.
- **1Hz blinking amber**— Power supply warning event is occurring and the power supply is operating. Warning events are high temperature, high power, high current, or slow fan.
- **Solid green**—Power supplies are operating normally
- **1Hz blinking green**—AC power is present but only 5V standby is on (Power Button is off)

Checking Power Supply Operational Status

[Example 1-1](#) displays the power supply status information in an excerpt of a **show healthinfo** CLI command output. The power supply unit should be evaluated for hotswapping if the status is down. An email alert is sent to the administrator when a power supply changes status from “ok.” PS1 is the lower power supply, PS2 is the upper power supply. In normal operation, PS1 supplies most of the power requirements, and PS2 is the redundant power supply.

Example 1-1 Power Supply Status in the show healthinfo CLI Command.

```
[pnadmin]$ show healthinfo
<SNIP>
Power Supply           Value  Status
-----
PS1 AC Current        2.36 Amps    ok
PS2 AC Current        0.12 Amps    ok
PS1 +12V Current      21 Amps     ok
PS2 +12V Current      0 Amps      ok
PS1 +12V Power        248 Watts    ok
PS2 +12V Power        0 Watts      ok
PS1 Status            0x01         ok
PS2 Status            0x09         ok

<SNIP>
```