Avaya Call Management System Dell® PowerEdge™ R220, R630, and R730 Computer Hardware Installation, Maintenance, and Troubleshooting

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Chapter 1: Introduction

Purpose

This document describes how to install, maintain, and troubleshoot the Dell® PowerEdge™ R220, R630, and R730 servers used with Avaya Call Management System (CMS).

The Dell R220, R630, and R730 servers support CMS R18.0 and later versions of CMS.

Note:

No new orders will be fulfilled for the Dell R220 server.

Intended audience

This document is intended for implementation engineers, support personnel, and system administrators who will install and maintain CMS.

Document changes since last issue

Mentioned withdrawal of support for the Dell R220 server.

Related resources

Documentation

Refer to the following document for more information:

Title	Use this document to:	Audience
Implementing		

Table continues…

Title	Use this document to:	Audience
Avaya Call Management System Software Installation, Maintenance, and Troubleshooting for Linux®	Install, maintain, and troubleshoot CMS on the Linux® operating system.	Implementation engineers and system administrators

Related links

Finding documents on the Avaya Support website on page 7
Downloading Dell documentation on page 7

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Procedure

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2. At the top of the screen, enter your username and password and click **Login**.
3. Put your cursor over **Support by Product**.
4. Click **Documents**.
5. In the **Enter your Product Here** search box, type the product name and then select the product from the drop-down list.
6. If there is more than one release, select the appropriate release number from the **Choose Release** drop-down list.
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Related links

Documentation on page 6

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Procedure

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3. Click **Servers, Storage, & Networking** in the **Select a product** section.

4. Click **PowerEdge** for servers or **PowerVault** or **Dell Storage** for database storage equipment.
5. Select the product model for which you want documentation.
6. Click **Manuals**.
7. Click the link that corresponds to the document that you want to view or download.

Related links

Documentation on page 6

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About this task

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Procedure

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  - In **Search**, type the product name. On the Search Results page, select **Video** in the **Content Type** column on the left.
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    Note:

    Videos are not available for all products.

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request. Chat with live agents to get answers to questions, or request an agent to connect you to a support team if an issue requires additional expertise.

Chapter 2: Installation

How to use this document

This guide contains information for installing the Dell™ PowerEdge™ Servers as part of an Avaya deployment and provides:

- Instructions for how to find the appropriate online server documentation from Dell
- References to specific topics in standard Dell documentation
- Suggested changes, details, and notes to assist the user in interpreting the manufacturer's documentation and to clarify Avaya's recommended implementation of the equipment
- Additional topics not covered in standard Dell documentation but which are necessary for successful installation and maintenance of Avaya products

Preparing for installation

This section contains information about the safety and system precautions that helps you prepare for the computer installation.

Safety precautions

For your protection, observe the following safety precautions when setting up your equipment:

- Follow all cautions, warnings, and instructions that are marked on the equipment.
- Never push objects of any kind through openings in the equipment. They could touch dangerous voltage points or short out components. This could result in fire or electric shock.
- Refer servicing of equipment to qualified personnel.
- To protect both yourself and the equipment, observe the following precautions:

Precaution	Item	Problem
Wear a conductive wrist strap or foot strap when handling printed circuit boards.	Wrist or foot strap	Electro-Static Discharge (ESD)

Table continues…

Precaution	Item	Problem
Reinstall all cabinet cover panels after you perform any service work on the system.	Cover panels	System damage and overheating
Make sure that you have installed a filler panel on all empty board slots.	Board slot filler panels	System damage and overheating

System precautions

Warning:

Do not make mechanical or electrical modifications to the computer. The manufacturer is not responsible for regulatory compliance of modified computers.

Ensure that the voltage and frequency of the power outlet used matches the electrical rating labels on the equipment.

Wear antistatic wrist straps when handling any magnetic storage devices and printed circuit boards.

Each power supply uses nominal input voltages of 100-240 V AC at 50-60 Hz. The computer should be powered by an Uninterruptible Power Supply (UPS) or a non-switched, dedicated, 20-amp circuit. The servers are designed to work with single-phase power systems having a grounded neutral conductor. To reduce the risk of electrical shock, do not plug servers into another type of power source. Contact your facilities manager or qualified electrician if you are unsure what type of power is supplied to your building.

A UPS provides a temporary electrical supply to a computer for several minutes, depending on the number of components connected to the UPS. For a CMS computer, a 1.5KVA minimum is required for each power supply. See your UPS documentation to determine the projected amount of backup battery time for your model. If the system is without power for longer than the backup time, the system may shut down improperly, and the customer could lose data.

Each of the following items requires a separate power cord:

- Computer
- External peripherals
- Monitor

Keep in mind the following:

- The room must have sufficient air conditioning capacity to support the cooling needs of the entire system.
- The air conditioning system must have controls that prevent excessive temperature.

Unpacking and inventorying the equipment

Warning:

Never move the computer when the power is on. Excessive movement can cause catastrophic disk drive failure. Always power the system off before moving the computer.

Warning:

Always wear an electrostatic discharge (ESD) strap when handling internal components.

Caution:

Always have up-to-date system backups before turning off and moving the computer.

Inspect all shipping cartons for evidence of physical damage. If a shipping carton is damaged, request that the carrier representative be present before the carton is opened.

Unpack the computer and associated peripheral equipment. Compare the contents of the carton to the shipping inventory list to verify that all equipment was delivered.

In the United States, contact your Avaya Sales team if any parts are defective on arrival or are missing.

Outside of the United States, contact your Avaya representative or distributor if any parts are missing or defective.

Parts list

Verify that you have the following components before you begin installation:

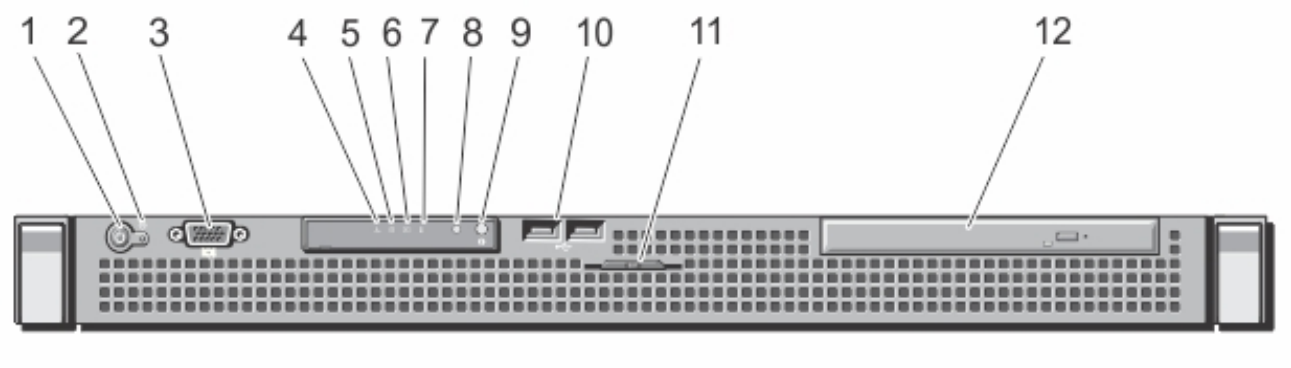
- Computer and power cord.
- RedHat and CMS software.
- Optional Backup device. See Avaya approved backup devices on page 35 for more information.

Dell R220 specifications

Notice for the Dell R220 server

No new orders will be fulfilled for the Dell R220 server.

Front view of Dell R220 server



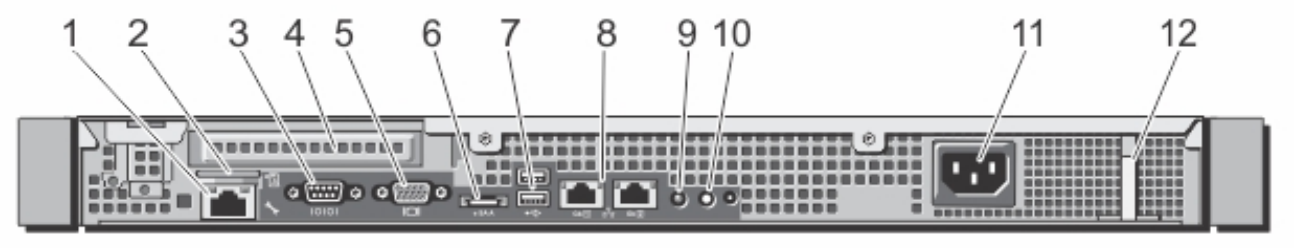
No.	Item	Icon	Description
1	Power-On Indicator, Power Button		The power-on indicator lights when the system power is on. The power button controls the power supply output to the system. **Note:** On ACPI-compliant operating systems, turning off the system using the power button causes the system to perform a graceful shutdown before power to the system is turned off.
2	NMI Button		Used to troubleshoot software and device driver errors when running certain operating systems. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the operating system documentation.
3	Video Connector		Allows you to connect a VGA display to the system.
4	Health Indicator		If the system is on, and in good health, the indicator lights solid blue. The indicator blinks amber if the system is on or in standby, and any error exists (for example, a failed fan or hard drive).
5	Hard-drive Indicator		The indicator blinks green to indicate hard-drive activity.
6	Electrical Indicator		The indicator blinks amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply or voltage regulator). See the System Event Log or system messages for the specific issue. Re-seat the power supply by removing and reinstalling it. If the problem persists, see Dell documentation.
7	Temperature Indicator		The indicator blinks amber if the system experiences a thermal error (for example, a temperature out of range or fan failure).

Table continues…

No.	Item	Icon	Description
			Ensure that none of the following conditions exist: • A cooling fan is removed or has failed. • System cover, cooling shroud, EMI filler panel, memory-module blank, or back-filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed.
8	System Status Indicator		Lights blue during normal system operation. Lights amber when the system needs attention due to a problem. • See the System Event Log or system messages for the specific issue. • Invalid memory configurations can cause the system to halt at startup without any video output.
9	System Identification Button		The system identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the system status indicator on the front and the back of the system flashes until one of the buttons is pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. To reset iDRAC (if not disabled in the iDRAC Settings option) press and hold the button for more than 15 seconds.
10	USB Connectors (2)		Allows you to insert USB devices to the system. The ports are USB 2.0-compliant.
11	System Service Tag		A slide-out label panel, which allows you to record system information, such as Service Tag, NIC, MAC address.
12	Optical Drive		One DVD+/-RW drive. **Note:** DVD devices are data only.

More information can be found in the *Dell Owner's Manual* in the Front Panel Features and Indicators section.

Back view of Dell R220 server



No.	Item	Icon	Description
1	iDRAC7 Enterprise Port (optional)		Dedicated management port. **Note:** The port is available for use only if the iDRAC7 Enterprise license is installed on your system. (Not normally used in Avaya systems.)
2	vFlash Media Card Slot		Not used on Avaya configurations.
3	Serial Connector		Allows you to connect a serial device to the system.
4	PCIe Expansion Card Slot		Allows you to connect one low-profile PCI Express expansion card.
5	Video Connector		Allows you to connect a VGA display to the system.
6	eSATA	eSATA	Not used on Avaya configurations.
7	USB Connectors (2)		Allows you to connect USB devices to the system. The ports are USB 3.0-compliant.
8	Ethernet Connectors (2)		Two integrated 10/100/1000 Mbps NIC connectors (Avaya Standard) **Note:** NIC port numbers are read from left to right, starting with Port 1.
9	System Status Indicator		Indicates the status of the system. Lights blue during normal system operation. Lights amber when the system needs attention due to a problem.
10	System Identification Button		The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the system status indicator on the back flashes until one of the buttons is pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode.

Table continues…

No.	Item	Icon	Description
			If you are directed by services to reset the iDRAC port, press and hold the button for more than 15 seconds.
10	Power Supply		Wattage depends on configuration.
12	Retention Clip		Secures the power cable.

More information can be found in the Dell Owner's Manual, in the Back Panel Features and Indicators section.

Dell R220 server specifications

Component	Description
Model	May 2015 Low Size
Footprint	1U chassis, single socket
Processor	One Intel® Xeon® E3-1220 v3 3.10 GHz 4-Core processor
Memory	16 GB RAM
HW RAID	No RAID or mirroring used
Hot-Plug disk drive cage	2 3.5" hot-plug hard drive bays
Disk drive	One internal 500 GB 7.2 KRPM SATA 3.5-inch disk
NICs	Two Gigabit Ethernet ports, plus LOM port
PCIe slots	1 PCIe riser, 1 half-height, full-length x16 link
Removable media	Slim line SATA DVD-RW optical drive
Power supply	One 250 W AC power supply, not hot-pluggable
Fans	7 Fan modules
Additional items	2 front USB, 2 back USB, and 1 internal USB port Front Video Connector Can be used as a desktop unit or can be configured for rack mounting

Dell R220 server physical specifications

Type	Description
Dimensions	Height: 4.24 cm (1.67 inch)
	Width: 43.4 cm (17.1 in)
	Depth: 39.37 cm (15.5 inch)
Weight (maximum configuration)	8.09 Kg (17.76 lb)

Dell R220 server power specifications

Specification	Value
BTU	1040 BTU/hr
Voltage	110 VAC (100–240 VAC auto-ranging 50/60 Hz)
Plug Type	NEMA 5-15P
Circuit Breaker	15 amp
Pole	1
AMP Draw	2.8 amps (based on 110 voltage)

Note:

The above power configuration is based on the following example:

- One E5-2430 Processor
- One 250 W power supplies
- One 500GB HDDs
- CPU load 100%
- Four 4 GB 1600 MT/s UDIMMs

Dell R220 server temperature and humidity requirements

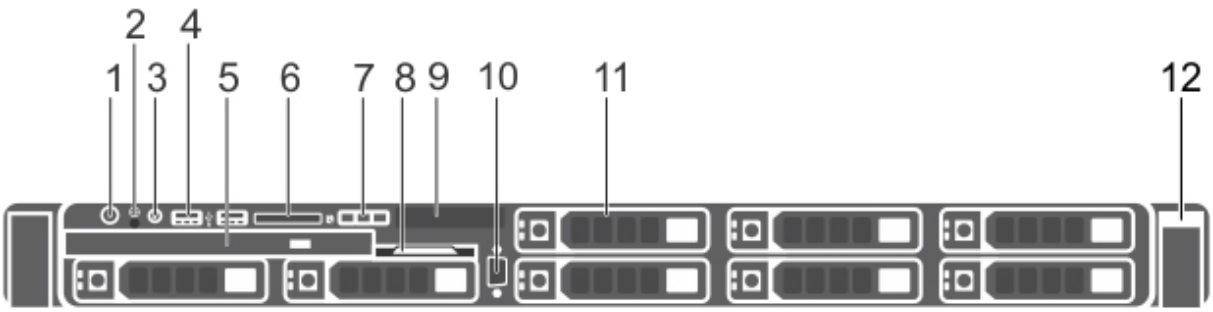
Specification	Value
Temperature range	
Operating (for altitude less than 950m or 3,117ft)	10° to 35 °C (50° to 95 °F) with no direct sunlight on the equipment.
Storage	-40° to 65° C (-40° to 149° F)
Relative humidity	
Operating	10% to 80% with 26 °C (78.8 °F) maximum dew point
Non-operating	5% to 95% with 33°C (91 °F) maximum dew point. Atmosphere must be non-condensing at all times.

Dell R220 server altitude and air pressure requirements

	Altitude
Operating	Maximum altitude 3,048m (10,000ft)
Storage	Maximum altitude 12,000m (39,370ft)

Dell R630 specifications

Front view of Dell R630 Server



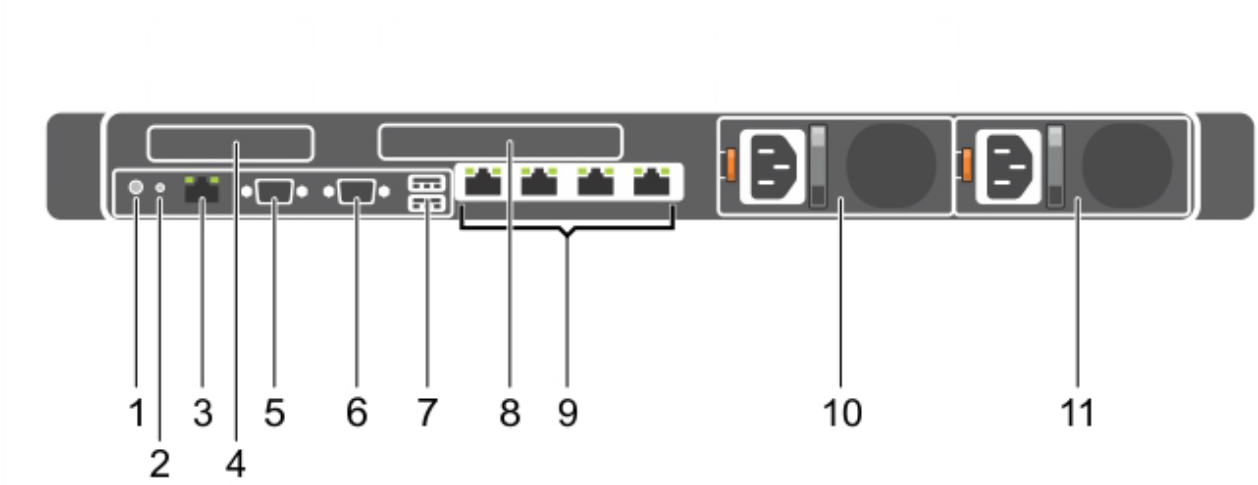
No.	Item	Icon	Description
1	Power-On Indicator, Power Button		The power-on indicator lights when the system power is on. The power button controls the power supply output to the system. **Note:** On ACPI-compliant operating systems, turning off the system using the power button causes the system to perform a graceful shutdown before power to the system is turned off.
2	NMI Button		Used to troubleshoot software and device driver errors when running certain operating systems. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the operating system documentation.
3	System Identification Button		The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back flashes blue until one of the buttons are pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. To reset the iDRAC (if not disabled in F2 iDRAC setup) press and hold the button for more than 15 seconds.

Table continues…

No.	Item	Icon	Description
4	USB Connectors (2)		Allows you to insert USB devices to the system. The ports are USB 2.0-compliant.
5	Optical Drive		One DVD+/-RW drive. **Note:** DVD devices are data only.
6	vFlash Media Card Slot		Not used on Avaya configurations.
7	LCD Menu Buttons		Allows you to navigate the control panel LCD menu.
8	Information Tag		A slide-out label panel, which allows you to record system information, such as Service Tag, NIC, MAC address.
9	LCD Panel		Displays system ID, status information, and system error messages. The LCD lights blue during normal system operation. When the system needs attention, the LCD lights amber and the LCD panel displays an error code followed by descriptive text. **Note:** If the system is connected to AC power and an error is detected, the LCD lights amber regardless of whether the system is turned on or off.
10	Video Connector		Allows you to connect a VGA display to the system.
11	Hard Drives		Support for up to six 2.5 inch hot-swappable hard drives.
12	Quick Sync		Not used on Avaya configurations.

More information can be found in the Dell Owner's Manual, in the Front Panel Features and Indicators section.

Back view of Dell R630 server



No.	Item	Icon	Description
1	System Identification Button		The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back blink until one of the buttons are pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. If you are directed by services to reset the iDRAC port, press and hold the button for more than 15 seconds.
2	System Identification Connector		Allows you to connect the optional system status indicator assembly through the optional cable management arm.
3	iDRAC8 Enterprise Port		Dedicated management port. **Note:** The port is available for use only if the iDRAC8 Enterprise license is installed on your system. (Not normally used in Avaya systems.)
4	PCIe Expansion Card Slot 1 (riser 2)		Allows you to connect a low profile PCIe expansion card. **Note:** If your server is equipped with 6 or 8 NIC ports this slot can contain two port 10/100/1000 Mbps NIC connectors or two 100 Mbps/ 1Gbps/10 Gbps SFP + connectors.
5	Serial Connector		Allows you to connect a serial device to the system.

Table continues…

No.	Item	Icon	Description
6	Video Connector		Allows you to connect a VGA display to the system.
7	USB Connectors (2)		Allows you to connect USB devices to the system. The ports are USB 3.0-compliant.
8	PCIe Expansion Card Slot 2 (riser 3)		Allows you to connect a full-height half-length PCIe expansion card. **Note:** If your server is equipped with 6 or 8 NIC ports this slot can contain two port 10/100/1000 Mbps NIC connectors or two 100 Mbps/ 1Gbps/10 Gbps SFP + connectors.
9	Ethernet Connectors (4)		Four integrated 10/100/1000 Mbps NIC connectors (Avaya Standard). **Note:** NIC port numbers are read from left to right, starting with Port 1, then continuing to Ports 2, 3, and 4.
10	Power Supply (PSU1)		Wattage and voltage type depends on configuration.
11	Power Supply (PSU2)		Wattage and voltage type depends on configuration.

More information can be found in the Dell Owner's Manual, in the Back Panel Features and Indicators section.

Dell R630 server specifications

Component	Description
Model	May 2015 Mid Size
Footprint	1U chassis, dual socket
Processor	One Intel® Xeon® E5-2620 v3 2.40 GHz 6-Core processor
Memory	32 GB RAM
HW RAID	H730 RAID controller with 1 GB Cache and battery backup. Optioned as RAID 10.
Hot-Plug disk drive cage	8 Small Form Factor 2.5" hot-plug hard drive bays are available when an optical drive is installed.
Disk drive	Four internal 300 GB 10 KRPM SAS 2.5-inch disks
NICs	Four Gigabit Ethernet ports, plus LOM port
PCIe slots	2 PCIe risers (left and center)
Removable media	Slim line SATA DVD-RW optical drive
Tape drive interface	SAS HBA with external ports to support optional tape drive
Power supply	Two hot-swappable 750 W AC power supplies

Table continues…

Component	Description
Fans	7 Fan modules
Additional items	2 front USB, 2 back USB, and 1 internal USB port Front Video Connector Can be used as a desktop unit or can be configured for rack mounting

Dell R630 server physical specifications

Type	Description
Dimensions	Height: 4.28 cm (1.69 inch)
	Width: 48.24 cm (18.99 in)
	Depth: 70 cm (27.58 in)
Weight (maximum configuration)	18.6 kg (41 lb)

Dell R630 server power specifications

Specification	Value
BTU	1058 BTU/hr
Voltage	110 VAC (100–240 VAC auto-ranging 50/60 Hz)
Plug Type	NEMA 5-15P
Circuit Breaker	15 amp
Pole	1
AMP Draw	2.8 A, 310 W (based on 110 voltage)

Note:

The above power configuration is based on the following example:

- Two E5-2620 Processors
- Two 750W power supplies
- Two 300GB HDDs
- CPU load 100%
- Eight 4 GB 1866 MT/s DIMMs

Dell R630 server temperature and humidity requirements

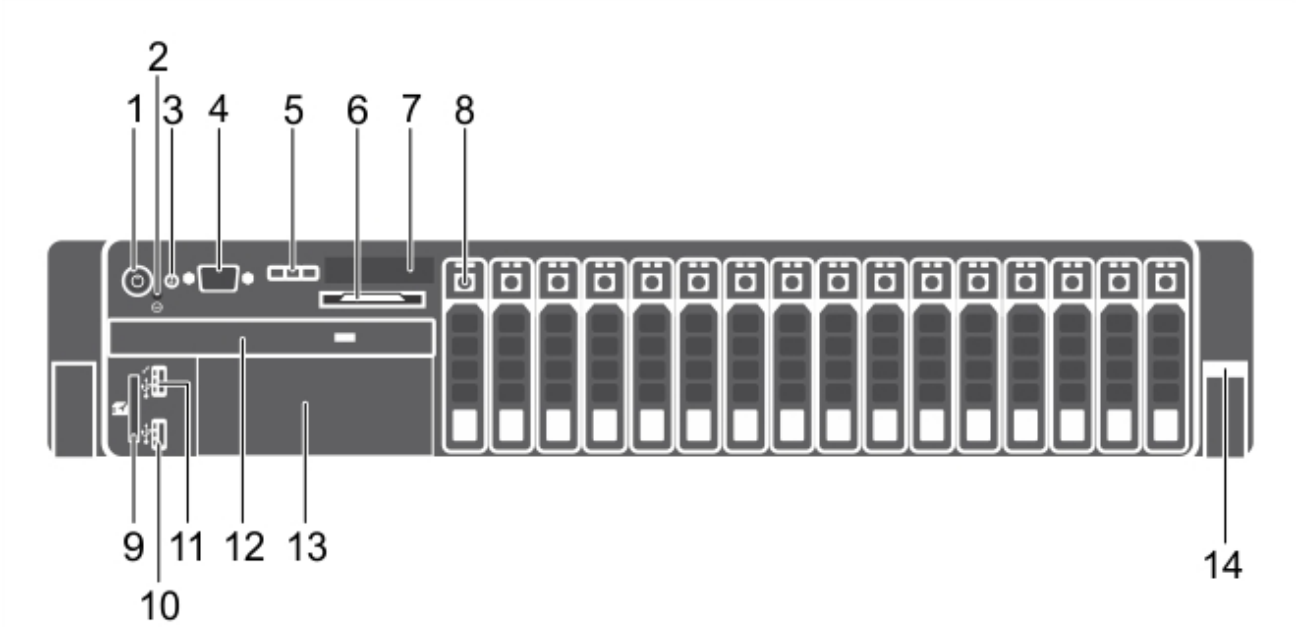
Specification	Value
Temperature range	
Operating (for altitude less than 950m or 3,117ft)	10° to 35 °C (50° to 95 °F) with no direct sunlight on the equipment.
Storage	-40° to 65° C (-40° to 149° F) with a maximum temperature gradation of 20 °C (36 °F) per hour
Relative humidity	
Operating	10% to 80% (non-condensing) with 26 °C (78.8 °F) maximum dew point
Non-operating	5% to 95% with 33°C (91 °F) maximum dew point

Dell R630 server altitude and air pressure requirements

	Altitude
Operating altitude de-rating	Maximum altitude 3,048m (10,000ft) **Note:** • Up to 35°C (95°F): Maximum temperature is reduced by 1°C/300 m (1°F/547 ft) above 950 m (3,117 ft). • 35°C to 40°C (95°F to 104°F): Maximum temperature is reduced by 1°C/175 m (1°F/319 ft) above 950 m (3,117 ft). • 40°C to 45°C (104°F to 113°F): Maximum temperature is reduced by 1°C/125 m (1°F/228 ft) above 950 m (3,117 ft).
Storage	Maximum altitude 12,000m (39,370 ft)

Dell R730 specifications

Front view of Dell R730 server



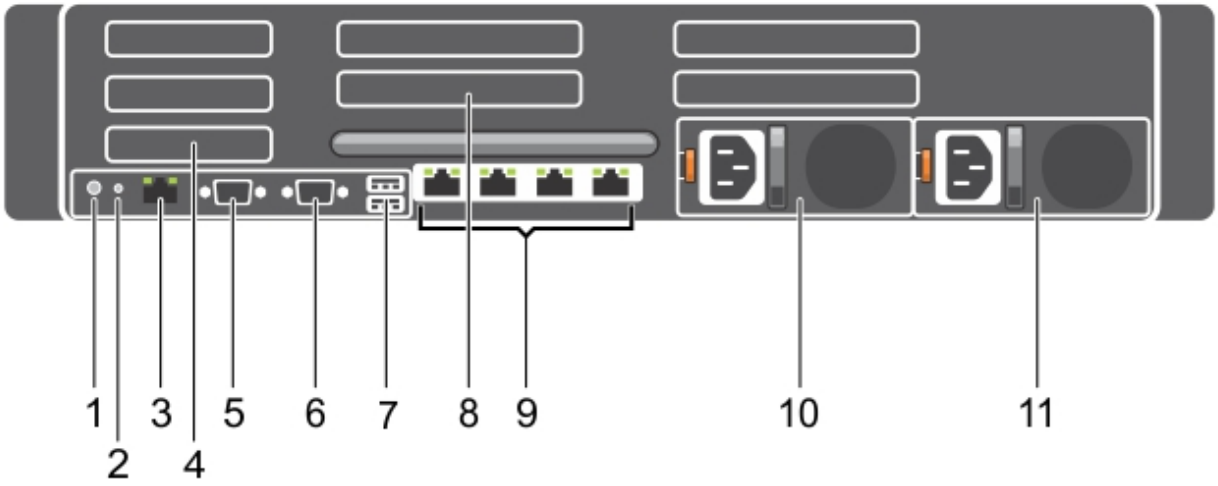
No.	Item	Icon	Description
1	Power-On Indicator, Power Button		The power-on indicator lights when the system power is on. The power button controls the power supply output to the system. **Note:** On ACPI-compliant operating systems, turning off the system using the power button causes the system to perform a graceful shutdown before power to the system is turned off.
2	NMI Button		Used to troubleshoot software and device driver errors when running certain operating systems. This button can be pressed using the end of a paper clip. Use this button only if directed to do so by qualified support personnel or by the operating system documentation.
3	System Identification Button		The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back flashes blue until one of the buttons are pressed again.

Table continues…

No.	Item	Icon	Description
			Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. If you are directed by services to reset the iDRAC port, press and hold the button for more than 15 seconds.
4	Video Connector		Allows you to connect a VGA display to the system.
5	LCD Menu Buttons		Allows you to navigate the control panel LCD menu.
6	Information Tag		A slide-out label panel, which allows you to record system information, such as Service Tag, NIC, MAC address.
7	LCD Panel		Displays system ID, status information, and system error messages. The LCD lights blue during normal system operation. When the system needs attention, the LCD lights amber and the LCD panel displays an error code followed by descriptive text. **Note:** If the system is connected to AC power and an error is detected, the LCD lights amber regardless of whether the system is turned on or off.
8	Hard Drives		Support for up to 16 2.5 inch hot-swappable hard drives.
9	vFlash Media Card Slot		Not used on Avaya configurations.
10	USB Connector		Allows you to insert USB devices to the system. The ports are USB 2.0-compliant.
11	USB Management Port/iDRAC Direct		Not used on Avaya configurations.
12	Optical Drive		One DVD+/-RW drive. **Note:** DVD devices are data only.
13	Tape Drive Slot		Not used on Avaya configurations.
14	Quick Sync		Not used on Avaya configurations.

More information can be found in the Dell Owner's Manual, in the Front Panel Features and Indicators section.

Back view of Dell R730 server



No.	Item	Icon	Description
1	System Identification Button		The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pressed, the LCD panel on the front and the system status indicator on the back blink until one of the buttons are pressed again. Press to toggle the system ID on and off. If the system stops responding during POST, press and hold the system ID button for more than five seconds to enter BIOS progress mode. If you are directed by services to reset the iDRAC port, press and hold the button for more than 15 seconds.
2	System Identification Connector		Allows you to connect the optional system status indicator assembly through the optional cable management arm.
3	iDRAC8 Enterprise Port		Dedicated management port. **Note:** The port is available for use only if the iDRAC8 Enterprise license is installed on your system. (Not normally used in Avaya systems)

Table continues…

No.	Item	Icon	Description
4	PCIe Expansion Card Slot 1 (riser 2)		Allows you to connect a low profile PCIe expansion card. **Note:** If your server is equipped with 6 or 8 NIC ports this slot can contain two port 10/100/1000 Mbps NIC connectors or two 100 Mbps/ 1Gbps/10 Gbps SFP + connectors.
5	Serial Connector		Allows you to connect a serial device to the system.
6	Video Connector		Allows you to connect a VGA display to the system.
7	USB Connectors (2)		Allows you to connect USB devices to the system. The ports are USB 3.0-compliant.
8	PCIe Expansion Card Slot 2 (riser 3)		Allows you to connect a full height half length PCIe expansion card. **Note:** If your server is equipped with 6 or 8 NIC ports this slot can contain two port 10/100/1000 Mbps NIC connectors or two 100 Mbps/ 1Gbps/10 Gbps SFP + connectors.
9	Ethernet Connectors (4)		Four integrated 10/100/1000 Mbps NIC connectors (Avaya Standard). **Note:** NIC port numbers are read from left to right, starting with Port 1, then continuing to Ports 2, 3, and 4.
10	Power Supply (PSU1)		Wattage and voltage type depends on configuration.
11	Power Supply (PSU2)		Wattage and voltage type depends on configuration.

More information can be found in the Dell Owner's Manual, in the Back Panel Features and Indicators section.

Dell R730 server specifications

Component	Description
Model	November 2015
Footprint	2U chassis, dual socket
Processor	Two Intel® Xeon® E5-2620 v3 2.40 GHz 6-Core processors
Memory	64 GB RAM
HW RAID	H730 RAID controller with 1 GB Cache and battery backup. Optioned as RAID 10.

Table continues…

Component	Description
Hot-Plug disk drive cage	16 Small Form Factor 2.5” hot-plug hard drive bays are available when an optical drive is installed.
Disk drive	12 internal 300 GB 10 KRPM SAS 2.5-inch disks
NICs	Four Gigabit Ethernet ports, plus LOM port
PCIe slots	2 PCIe risers (left and center)
Removable media	Internal DVD-RW disc drive
Tape drive interface	SAS HBA with external ports to support optional tape drive
Power supply	Two hot-swappable 750 W AC power supplies
Fans	6 fan modules
Additional items	2 front USB, 2 back USB, and 1 internal USB port Front Video Connector Can be used as a desktop unit or can be configured for rack mounting

Dell R730 server physical specifications

Type	Description
Dimensions	Height: 8.73 cm (3.44 in)
	Width: 48.2 cm (18.98 in)
	Depth: 75.58 cm (29.75 inch)
Weight (maximum configuration)	31.4 Kg (69.23 lb)

Dell R730 server power specifications

Specification	Value
BTU	1294 BTU/hr maximum
Voltage	100–240 V AC, autoranging, 50/60 Hz
Plug Type	NEMA 5-15P
Circuit Breaker	15 amp
Pole	1
AMP Draw	3.4 A, 379 W (based on 110 voltage)

Note:

The above power configuration is based on the following example:

- Two E5-2620 V3 Processors
- Two 750 W power supplies

- 12 300GB HDDs
- CPU load 100%
- 16 4 GB 1866 MT/s DIMMs

Dell R730 server temperature and humidity requirements

Specification	Value
Temperature range	
Operating (for altitude less than 950 m or 3,117 ft)	10° to 35 °C (50° to 95 °F) with no direct sunlight on the equipment.
Storage	-40° to 65° C (-40° to 149° F)
Relative humidity	
Operating	10% to 80% (non-condensing) with 29 °C (84.2 °F) maximum dew point.
Non-operating	5% to 95% with 33°C (91 °F) maximum dew point. Atmosphere must be non-condensing at all times.

Dell R730 server altitude and air pressure requirements

	Altitude
Operating	Maximum altitude 3,048m (10,000ft) **Note:** For up to 35 °C (95 °F), maximum temperature is reduced by 1° C/300 m (1° F/547 ft) above 950 m (3,117 ft). For 35 °C to 40 °C (95 °F to 104 °F), maximum temperature is reduced by 1° C/175 m (1° F/319 ft) above 950 m (3,117 ft). For 40 °C to 45 °C (104 °F to 113 °F), maximum temperature is reduced by 1° C/125 m (1° F/228 ft) above 950 m (3,117 ft).
Storage	Maximum altitude 12,000m (39,370ft)

Installing the server in the rack

About this task

Note:

Although not used frequently, Avaya customers are required to have a monitor, USB keyboard, and USB mouse available for use by installation and/or servicing technicians.

Before you begin

Get the *Rack Installation Instructions* that are shipped with the hardware for more information. If not shipped with the hardware, see the Dell documentation Web site for instructions.

Procedure

1. Examine contents of shipping container (Avaya provided equipment), and ensure that the 6-digit material code on the order matches the 6-digit material code on the shipping container.
2. Verify that the rack is installed according to the manufacturer's instructions and in accordance with all local codes and laws. Verify that the rack is grounded in accordance with local electrical code.
3. Remove the cabinet doors, if necessary.
4. Attach the rails to the rack

   The rails included with the server will accommodate most square-hole racks. If these rails do not fit the rack, the customer must provide rails or a shelf for rack installation. Also, the rails included with the server might not work with round-hole racks. The customer can obtain rails and/or a shelf from any distributor, for example http://www.racksolutions.com/. The customer-provided rails and rack must be on site prior to the first day of installation.

   Note:

   The customer is responsible for any rack screws.
5. Attach the server to the rack.
6. Connect the power cord(s).

   See the following *Getting Started Guide* sections: *Connecting the power cables* and *Securing the power cord* for more information.

Physical system protection requirements

To properly ventilate the system, you must provide at least 7.6 cm (3.0 in) of clearance at the front and back of the server.

Note:

It is the customer’s responsibility to ensure that no environmental hazards (i.e. excessive heat, excessive humidity, or improper ventilation) or electromagnetic interference from proximate equipment interfere with the operation of the server.

Setting up power for the server

About this task

Use a UPS or a grounded outlet to provide power for the server.

A CMS server requires 1.5KVA of power for each power supply on the server.

See your UPS documentation to determine the estimated amount of time the battery will back up your server.

Caution:

If the electrical supply is not restored before the backup electrical supply is exhausted, the computer might shut down improperly resulting in the loss of customer data.

If you do not use a UPS, you must use a grounded outlet on a minimum 15-amp circuit.

Procedure

1. Plug in the IEC end of the power cord to the power outlet on the server.

   For installations outside the United States and Canada, use a power cord approved for local power configurations.

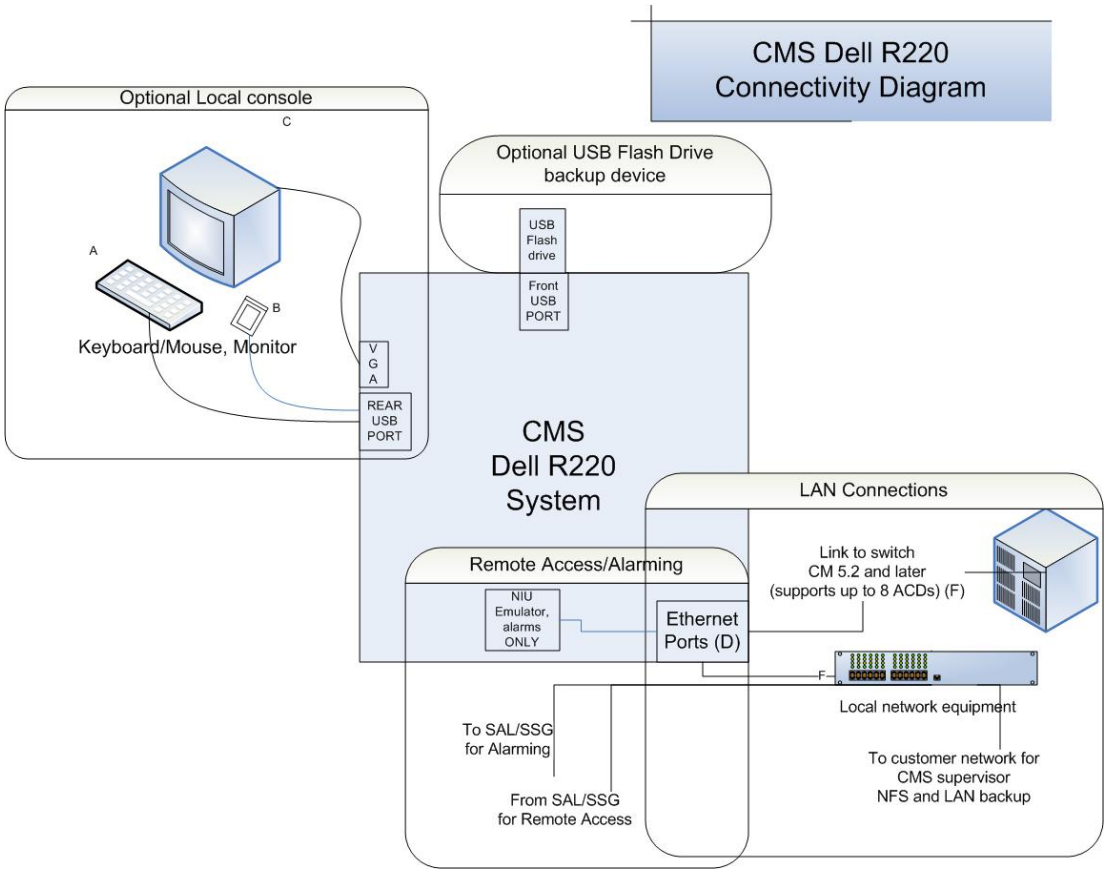
2. Plug the power cord from the server into an outlet on a UPS or a grounded power outlet.

   Important:

   Do not turn on power at this time. Wait until instructed later in this document.

Peripheral connectivity

Dell R220 connectivity



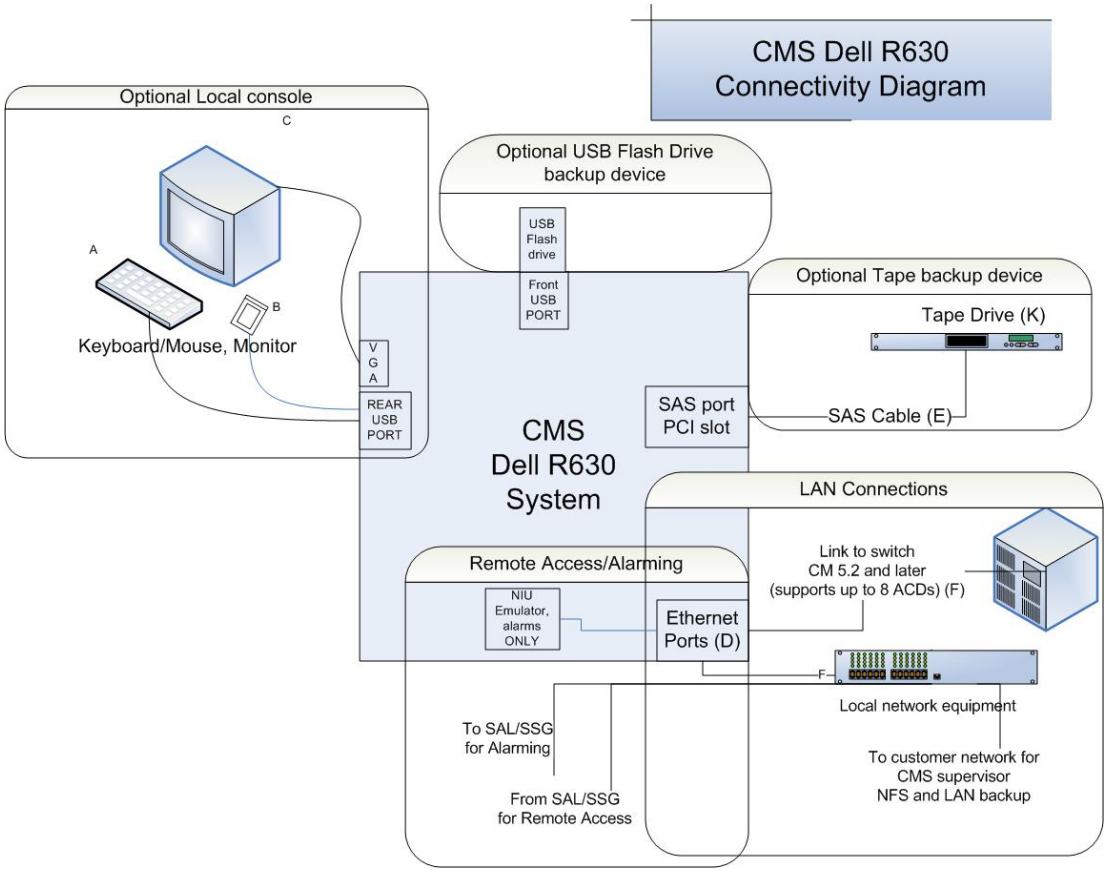
Note:

Use the USB Flash drive only for smaller installations.

The following table lists call outs from the connectivity diagram that describe what external devices connect to the CMS server. For information about switch connections for CMS, see *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*.

Connectivity diagram call out	Description
A	USB keyboard — customer provided
B	USB mouse — customer provided
C	VGA Monitor with cable — customer provided
D	Gigabit Ethernet ports (built-in)
F	Customer supplied CAT 5 Ethernet cable (minimum 10 feet, 3 meters)

Dell R630 connectivity



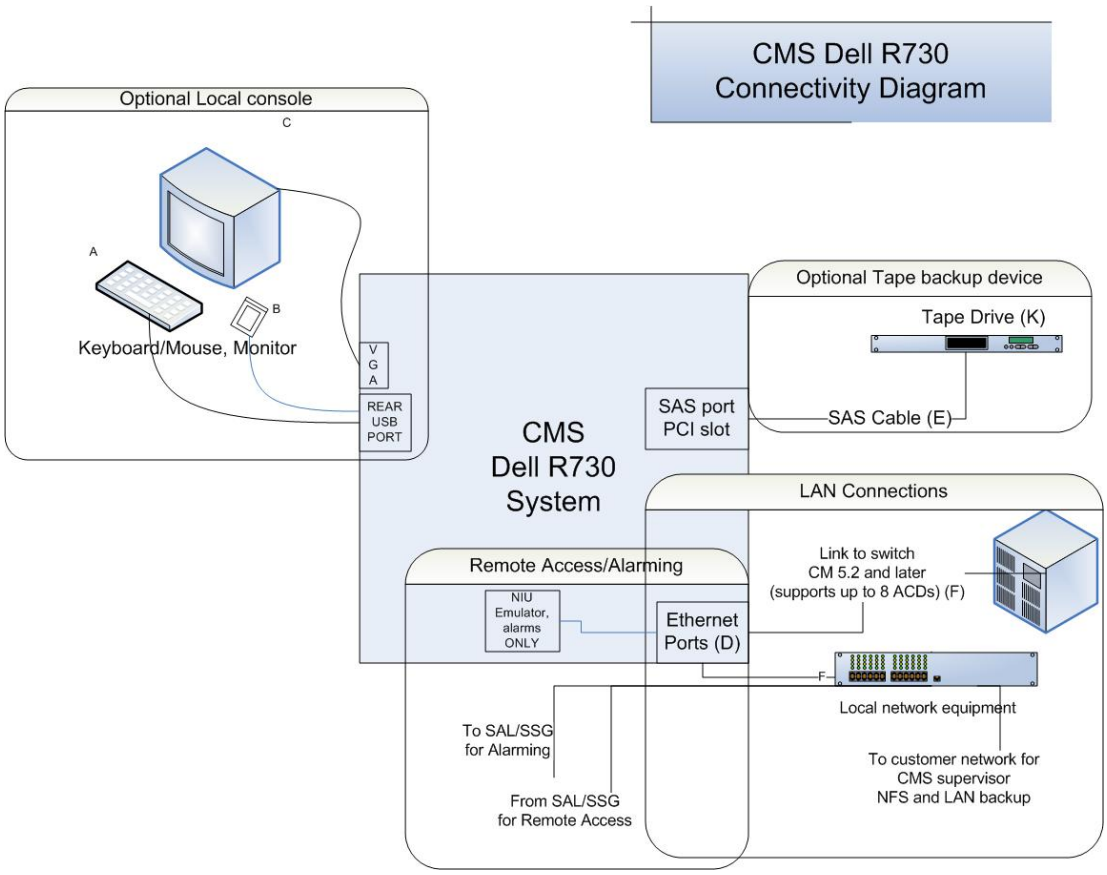
Note:

Use the USB Flash drive only for smaller installations.

The following table lists call outs from the connectivity diagram that describe what external devices connect to the CMS server. For information about switch connections for CMS, see *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*.

Connectivity diagram call out	Description
A	USB keyboard — customer provided
B	USB mouse — customer provided
C	VGA Monitor with cable — customer provided
D	Gigabit Ethernet ports (built-in)
E (optional)	Customer supplied HD-68 to VHDCI SCSI cable (3 feet, 0.8 meters) or SAS to SAS cable (0.5 meters) — connect to the left port on the SAS HBA card.
F	Customer supplied CAT 5 Ethernet cable (minimum 10 feet, 3 meters)
K (optional)	Tape drive and AC power cord — customer provided

Dell R730 connectivity



The following table lists call outs from the connectivity diagram that describe what external devices connect to the CMS server. For information about switch connections for CMS, see *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*.

Connectivity diagram call out	Description
A	USB keyboard — customer provided
B	USB mouse — customer provided
C	VGA Monitor with cable — customer provided
D	Gigabit Ethernet ports (built-in)
E (optional)	Customer supplied HD-68 to VHDCI SCSI cable (3 feet, 0.8 meters) or SAS to SAS cable (0.5 meters) — connect to the left port on the SAS HBA card.
F	Customer supplied CAT 5 Ethernet cable (minimum 10 feet, 3 meters)
K (optional)	Tape drive and AC power cord — customer provided

Avaya approved backup devices

Tape drive	Tape cartridge
DAT 160	DDS compliant 150 meter 160-GB DAT cartridge 8 mm
DAT 320	DDS compliant 153 meter 320-GB DAT cartridge 8 mm
LTO-4	820 meter 800 GB LTO-4 cartridge 12.65 mm
LTO-5	846 meter 1.5 TB LTO-5 cartridge 12.65 mm LTO-4 cartridges can also be used in the LTO-5 drive.

Support for KVM and headless CMS systems

CMS servers are shipped without a keyboard, video monitor, or mouse (KVM). Customers are expected to have a lab set of these (commonly known as a crash cart) available for technical support.

Linux-based CMS servers do *not* have a GUI console. The console is text-based only. KVM systems typically seem to work fine with the Linux-based systems. However, use of a KVM or crash cart is a customer responsibility.

Connecting to external interfaces

Connecting the switch link

The CMS server uses TCP/IP over a LAN at 10/100 Mbps to connect to the Communication Manager switch. One CMS server can collect data from eight Communication Manager switches. To the CMS server, each Communication Manager switch represents one Automatic Call Distribution (ACD) switch.

Important:

You must use Ethernet port 1 for the switch connection.

For more information about how to connect and administer the Communication Manager switch link, see *Avaya Call Management System Switch Connections, Administration, and Troubleshooting*.

Connecting to the customer network

The CMS server has built-in Ethernet ports that support network speeds of 10/100/1000 Mbps. However, for CMS installations, you must use only speeds of 10/100 Mbps. The customer network Ethernet connection is used for CMS Supervisor, network printers, and LAN backup.

Important:

You must use Ethernet port 0 for the customer network connection.

Connecting the customer supplied SAS tape drive

Connect the customer supplied Serial Attached SCSI (SAS) cable to the left-most port on the SAS HBA card on the back of the server to the SAS port on the rear of the customer supplied tape drive.

Important:

The Dell R220 does not support a tape drive. You must use a USB stick or an NFS mount point for backups.

Note:

No new orders will be fulfilled for the Dell R220 server.

Turning on the system and verifying POST

About this task

After you assemble the system, turn on the server and verify the results of Power-On Self Test (POST).

Before you begin

Install all hardware components as directed by Avaya CMS Provisioning personnel.

Procedure

1. Turn on the power to the UPS.
2. Turn on the tape drive, if installed.
3. Turn on the system monitor.
4. Press and release the power button.

   The server boots up.
5. Verify the results of POST after the system boots. Contact Avaya CMS Provisioning if you see any errors.

Turning the system over for provisioning

After completing the physical installation of the system, the Avaya CMS Provisioning group will provision features and services on the system.

See the following chapters in the *Avaya Call Management System Software Installation, Maintenance, and Troubleshooting for Linux®* document for your CMS release.

- *Installing CMS and supporting software*
- *Turning the system over to the customer*

Chapter 3: Maintenance

Contacting Avaya Services

Avaya provides a telephone number to report problems or to ask questions about your product:

- The support telephone number is 1–800–242–2121 in the United States.
- For additional support telephone numbers, see the Avaya Website: http://www.avaya.com/support.

Precautions

Danger:

Hazardous energy levels are present inside the system when the system remains connected to a power source. Be sure to follow the safety procedures in the owner's guide or service manual.

Warning:

Before replacing any component in the system, you must turn off the computer and disconnect the AC power cord.

Caution:

Printed circuit boards and hard disk drives contain electronic components that are extremely sensitive to static electricity. Ordinary amounts of static from your clothes or the work environment can destroy components. Do not touch the components or any metal parts without taking proper antistatic precautions. See Using an ESD wrist strap on page 40 for more information.

Caution:

Avoid keeping the cover off for extended periods of time while the system is operating. The cover must be installed to prevent automatic thermal shutdown.

Important:

For security purposes, CMS has a hardware authorization feature. During the initial CMS feature authorization process, the system preserves information about the configuration and hardware of the CMS system. The system periodically checks for changes to the motherboard,

IP address, or MAC address. If the system detects differences between the preserved CMS hardware information and the current CMS hardware information, the CMS hardware feature is reset to *not authorized*. This forces the **auth_set** command to be re-run. If, at any time, the system displays a message that the **auth_set** command needs to be run, then the customer must contact the Avaya Services personnel to run the **auth_set** command. The **auth_set** command requires a password that is only available to authorized Avaya personnel. Once the **auth_set** command has been re-run, the system preserves the new CMS hardware information. To minimize downtime, the customer must make arrangements with Avaya personnel to run the **auth_set** command prior to performing any of the following changes to the system:

- Replacing a motherboard
- Changing the IP address of the CMS system

Cleaning the tape drive

CMS servers do not ship with tape drive cleaning tapes. Customers using tape backup must purchase at least one cleaning tape as soon as the computer is installed and in service. The number of cleaning cycles available on a cleaning cartridge depends on the manufacturer of the cartridge.

The customer must clean the tape regularly to maximize tape drive performance, once a week or every five (5) data backups, whichever comes first.

To clean the tape drive, follow the instructions in the manufacturers documentation for the tape drive that the customer purchased.

Turning off the system

Procedure

1. Log in to the system as `root`.
2. Enter:

   /usr/sbin/shutdown -h now

   The system shuts down.
3. Turn off the system monitor.
4. Turn off any external devices.

Turning on the system

Procedure

1. Turn on any external devices.
2. Turn on the system monitor.
3. Press and release the power button on the server.

   If the system is operating properly, the system displays a banner screen within 4–5 minutes after it is turned on.
4. Log in to the system as `root` .

Using an ESD wrist strap

About this task

Perform the steps in this procedure before you start working on the components inside the server.

Procedure

1. Ensure that the server is plugged in to the AC power.
2. Ensure that the power is off.
3. Attach the ESD wrist strap to the chassis frame and to your wrist.
4. Unplug the AC power cord.
5. Continue with the component procedure required for maintenance.

Replacing RAID batteries

About this task

Follow the steps below to replace a defective RAID Battery.

Before you begin

Before attempting to remove the battery, make sure that all ESD precautions have been taken.

Procedure

1. Shut down server according to the Avaya application.
2. Remove all power from the server and power sources.
3. Extend the server from the rack, taking care that the server rails do not run off the rack ends and that cables are not pulled out of the server.

4. Remove the access panel.
5. Remove the battery from the RAID card.
6. Remove the cabling from the RAID battery.
7. Install the new RAID battery and cabling.
8. Replace the access panel.
9. Push the server back into the rack.
10. Reconnect power to the server and all power sources.
11. Boot up the server and confirm it is operating properly.

Chapter 4: Troubleshooting

Contacting Avaya Services

Avaya provides a telephone number to report problems or to ask questions about your product:

- The support telephone number is 1–800–242–2121 in the United States.
- For additional support telephone numbers, see the Avaya Website: http://www.avaya.com/support.

System messages

About this task

The `/var/log` directory contains the message files. The most recent messages are in `/var/log/messages`. The system consolidates older system messages into weekly message files. You can identify these message files by the date of the message files. The message files also contain crash reports and other data that might increase the hard disk usage. Delete all unnecessary message files in the `/var/log` directory to prevent excess hard disk usage. You can automate this task by using the **crontab** utility. For more information about **crontab**, see your Linux® system documentation.

Procedure

1. Log on as `root`.
2. Enter:

   dmesg

   The system displays the most recent messages. For example:

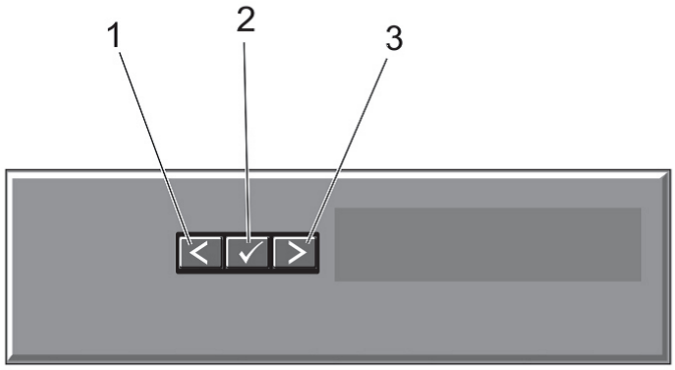
```
Wed Feb 14 11:01:59 MST 2001
Feb 14 08:19:20 tern pseudo: [ID 129642 kern.info] pseudo-device: tod0
Feb 14 08:19:22 tern syslogd: going down on signal 15
...........
...........
...........
Feb 16 14:24:08 tern scsi: [ID 365881 kern.info] /pci@1f,0/pci@1/scsi@1,1/st@5,:
Feb 16 14:24:08 tern <HP DDS-4 DAT>
Feb 16 14:24:08 tern scsi: [ID 193665 kern.info] st12 at glm1: target 5 lun 0
Feb 16 14:24:08 tern genunix: [ID 936769 kern.info] st12 is /pci@1f,0/pci@1/scs0
Feb 19 10:17:59 tern automountd[198]: [ID 784820 daemon.error] server cortex nog
Feb 19 10:18:27 tern last message repeated 6 times
```

Front LCD panel

Use this display to identify hardware status and problems with the server.

The system's LCD panel provides system information and status and error messages to indicate when the system is operating correctly or when the system needs attention.

- The LCD backlight lights blue during normal operating conditions and lights amber to indicate an error condition. (Error codes are listed in the System Messages section of the Dell Owner's Manual.)
- The LCD backlight is off when the system is in standby mode and can be turned on by pressing either the Select, Left, or Right button on the LCD panel.
- The LCD backlight remains off if LCD messaging is turned off through the iDRAC utility, the LCD panel, or other tools.



Item	Button	Description
1	Left	Moves the cursor back in one-step increments
2	Select	Selects the menu item highlighted by the cursor
3	Right	Moves the cursor forward in one-step increments. During message scrolling: • Press once to increase scrolling speed • Press again to stop • Press again to return to default scrolling speed • Press again to repeat the cycle

Dell Documentation Reference(s)

Owner's Manual: LCD Panel Features

Owner's Manual: System Messages

LCD home screen

The display can be used to view system hardware configuration.

The LCD Screen is mainly used to display hardware system errors and alarms. The home screen displays user-configurable information about the system. This screen is displayed during normal system operation when there are no status messages or errors. Servers that are configured by Avaya's integrator display Avaya on the home screen. When the system is in standby mode, the LCD backlight turns off after five minutes of inactivity if there are no error messages. Press one of the three navigation buttons (Select, Left, or Right) to view the Home screen.

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

From the Home screen, press the Select button to enter the main menu.

Option	Description
MAC	Displays the MAC addresses for iDRAC, iSCSI, or Network devices
Name	Displays the name of the Host, Model, or User String for the system
Number	Displays the Asset tag or the Service tag for the system
Power	Displays the power output of the system in BTU/hr or Watts. The display format can be configured in the Set home submenu of the Setup menu
Temperature	Displays the temperature of the system in Celsius or Fahrenheit The display format can be configured in the Set home submenu of the Setup menu.
iDRAC IP	Most Avaya Applications do not administer or use the iDRAC interface

Dell documentation reference — Owner's Manual: LCD View Menu

RAID battery problems

Symptoms

- RAID array cannot be created.
- Slow server write performance.
- Slow or failed upgrades.
- Error displayed on power up screen or LCD panel when server is powered on.
- Avaya's application alarming has indicated a RAID battery failure.

Dell documentation reference(s)

Owner's Manual: Troubleshooting a Storage Controller

Troubleshooting RAID batteries

About this task

Follow the steps below to troubleshoot a RAID controller battery for platforms that use RAID controllers.

Note:

Always follow safe electrostatic discharge practices.

Procedure

1. Use the following command to check the status of the battery at the Linux prompt:

   ```
   /opt/MegaRAID/MegaCli/MegaCli64 -AdpBbuCmd -GetBbuStatus -a0
   ```

   When the RAID battery's remaining capacity is below 100mAh or if you get an alarm about the battery, replace the battery. Expected battery life is 3-5 years.

   The following is an example of the outputs of the RAID battery status commands:

   ```
   /opt/MegaRAID/MegaCli/MegaCli64 -AdpBbuCmd  -GetBbuStatus -a0

   BBU status for Adapter: 0

   Battery Type: BBU
   Voltage: 3917 mV
   Current: 0 mA
   Temperature: 45 C

   BBU Firmware Status:

   Charging Status              : None
   Voltage                      : OK
   Temperature                  : OK
     Learn Cycle Requested        : No
     Learn Cycle Active           : No
     Learn Cycle Status           : OK
   Learn Cycle Timeout          : No
   I2c Errors Detected          : No
   Battery Pack Missing         : No
   Battery Replacement required: No
   Remaining Capacity Low       : No
   Periodic Learn Required      : No

   Battery State

   GasGuageStatus:
   Fully Discharged        : Yes
     Discharging             : No
     Initialized             : No
   Remaining Time Alarm    : No
   Remaining Capacity Alarm: Yes
    Discharge Terminated    : No
     Over Temperature        : No
   Charging Terminated     : No
   Over Charged            : No

   Relative State of Charge: 99 %
   Charger Status: Complete
   Remaining Capacity: 500 mAh
   ```

```
Full Charge Capacity: 510 mAh

isSOHGood: Yes

Exit Code: 0x00
```

The fields in the above output that indicate the status of a good/failing battery is the Remaining Capacity and Full Charge Capacity. Verification of the output depends on the current charging status. If the charging status is none, then the values in the fields are valid. If the charging status is anything but none (charging, discharging) then this indicates that the battery is in a learn cycle and the capacity numbers cannot be used at the present time. Charging status must read none before battery health can be evaluated.

Good Battery Status – Remaining Capacity is above 100mAh

2. To troubleshoot System Platform or when an Avaya application does not have internal RAID functionality, do the following procedure. The Avaya application will need to be taken out of service for this process.
   a. Reboot the system from console

      Avaya customer must provide a keyboard, mouse, and monitor for the system when an Avaya or Business Partner tech must do work on-site.

   b. When prompted, press F2 to enter system setup.
   c. Under System Setup, select **Device Settings**.
   d. Under Device Settings, select **Integrated RAID Controller 1: Dell PERC <PERC H730 Mini> Configuration Utility**.
   e. Go to **Hardware Components** > **Advanced** > **Battery Management** > **Advanced**.

      The output of this procedure is as follows:

```
Integrated RAID controller 1: Dell Perc <Perc H730 Mini> Configuration Utility
Configuration Options – Controller Management – Battery management
Battery State --------------------Optimal
Learn Mode ----------------------Transparent
Remaining Capacity ------------------- should be over 100 mAh
```

Recovery procedures

Use the recovery procedures in this section to troubleshoot problems encountered in the system.

Loss of power

If the system loses power, it is recommended (but not required) that you empty the disc drive and tape drives. The system boots from the disk by default.

Turning on the system

Procedure

1. Turn on any external devices.
2. Turn on the system monitor.
3. Press and release the power button on the server.

   If the system is operating properly, the system displays a banner screen within 4–5 minutes after it is turned on.
4. Log in to the system as `root` .

Turning off the system

Procedure

1. Log in to the system as `root`.
2. Enter:

   `/usr/sbin/shutdown -h now`

   The system shuts down.
3. Turn off the system monitor.
4. Turn off any external devices.

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