Maintaining and Troubleshooting Avaya Solutions Platform 130 Series

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Chapter 1: Introduction

Purpose

This document provides general maintenance and troubleshooting information for the Avaya Solutions Platform 130 R6.x servers (KVM on Red Hat Enterprise Linux 8.10).

This document is intended for the professional who is involved in the maintenance and troubleshooting activities of the Avaya Solutions Platform 130 servers.

Avaya Solutions Platform was formerly called Avaya Converged Platform (ACP). This document might still refer to Avaya Solutions Platform as Avaya Converged Platform or ACP in some places.

Change history

Issue	Date	Summary of changes
4	June 2026	Updated for ASP 6.0.0.5.0.
3	February 2026	• Updated for ASP 6.0.0.4.0. • Introduction of support for 10/25GbE NIC.
2	August 2025	Added the following content: • Importing HDDs from a failed server on page 171. • HDD import failure on page 181.
1	February 2025	Initial release

Dell server overview

The Avaya Solutions Platform servers category includes Dell servers that support Avaya software solutions, some requiring additional hardware and memory requirements beyond the standard configuration. This document covers the standard configuration only. Consult specific Avaya product documentation for application-specific or solution-specific server configurations.

- Avaya Solutions Platform servers are supplied under an OEM relationship, and Avaya servers are treated differently than commercially available servers from the vendors.

- Support, warranty and repair are through Avaya's processes, not through the OEM vendor's support process.
- Lifecycle Hardware and BIOS and firmware updates are managed by the Avaya Common Server team in conjunction with application R&D teams. These servers must *not* be updated with BIOS or firmware updates from the vendor's web site. You can only use Avaya-provided updates. Updating directly from the vendor's web site results in an unsupported configuration.
- All BIOS or firmware updates are provided through Avaya. Go to the Avaya Support website at http://support.avaya.com for additional information.
- BIOS/Firmware updates are available on http://plds.avaya.com and are customer installable.
- Only use Avaya-provided downloads, information, and support. Send questions to the Server Product Management mailbox at aspsales@avaya.com.
- Avaya Solutions Platform servers are turnkey appliances. No servers designed for a particular application can be repurposed for use with another application. The only exception is when an application provides an upgrade or migration path from an existing server state to a different server state with the appropriate kits, tools, documentation, and training materials.
- Avaya Solutions Platform 130 KVM on RHEL updates should only be obtained from Avaya. Updating directly from the vendors' websites results in an unsupported configuration. Avaya creates a customized image to ensure that any updates are compatible with the underlying hardware, drivers, etc. When Avaya has an update from the vendor, the new image is fully vetted with the Avaya solutions to assess any potential performance or capacity impacts. This image is then made available on http://plds.avaya.com and is customer installable.
- Do not contact Dell or Red Hat for Service; all support, warranty, repair, and maintenance are through the Avaya processes.
- Avaya strongly recommends that all servers are protected with an Uninterrupted Power Supply for power surge and interruption protection. Avaya is not responsible for servers damaged by power surges, brownouts, blackouts etc. when the server is connected to standard power mains and has no protection.
- The Dell R640 H730 RAID battery is a consumable item and therefore is considered a customer replaceable unit (CRU). The RAID battery is not covered under the maintenance agreement. Customers are responsible for installing them, the procedure for which is in RAID Battery on page 125. The Dell R640 H750 RAID battery and Dell R660xs H755 RAID batteries are not separate orderable entities. In the event of a failure of the RAID battery in the Dell R640 H750 RAID controller or Dell R660xs H755 RAID controller, the RAID controller itself will need to be replaced. The RAID controller includes a battery.
- Quality assurance - product integrity testing or international environmental restrictions have been completed by Dell and verified with Avaya through the use of Design for Environmental Checklists. These lists include: batteries, printed wiring boards, plastic parts, product packaging, RoHS, green requirements, and energy efficiency.

About this document

This document contains information on maintaining and troubleshooting Avaya Solutions Platform servers. This document provides:

- Instructions to maintain and troubleshoot Avaya Solutions Platform servers.
- 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.
- Guidelines to diagnose server problems.
- The document is divided into four sections:
  - Chapters 1-2: Overview applicable to both Dell R660xs and Dell R640.
  - Chapters 3-14: Specific to Dell R660xs.
  - Chapters 15-27: Specific to Dell R640.
  - Chapters 28-33: Common to both Dell R660xs and Dell R640.

Note:

The user may require a monitor, USB keyboard, and mouse connected to the server for debugging server problems.

Downloading Dell documentation

About this task

You can find Dell documentation at http://www.dell.com and search for PowerEdge™ R640 and R660xs documentation for reference.

Important:

Avaya documentation takes precedence over Dell documentation and procedures.

Chapter 2: Overview

What's new in Avaya Solutions Platform Release R6.0.x

The ASP R6.0.x program introduces a new hypervisor and updated server hardware. In June 2024, Broadcom made the strategic decision to discontinue its Embedded OEM program. As Avaya is an Embedded OEM partner of VMware, this decision impacted the ASP 130 and ASP S8300 solutions leading to the necessity of identifying a new hypervisor. The ASP R6.0.x program introduces *KVM on Red Hat Enterprise Linux 8.10 (KVM on RHEL 8.10)*. In addition to the new hypervisor, ASP R6.0.x also introduces an updated server hardware platform with the Dell R660xs. All ASP R6.0.x solutions (ASP 130 and ASP S8300) only ship with the new KVM on RHEL 8.10 hypervisor.

Important:

ESXi is not supported on ASP R6.0.x.

To ensure a smooth transition, Avaya has developed a migration path from earlier versions of ASP 130 or ASP S8300 running on VMware. For more information, see *PSN020640u – Avaya Solutions Platform R6.0.x Introduction*.

- For existing Installed ASP 130 Release and ASP S8300 Release 5.1 VMware Systems: Broadcom continues to provide critical security patches for currently installed VMware ESXI 7.0 systems on Avaya's ASP 5.1.x platform.
- Existing ASP 130 (Dell R640) have a migration path to ASP R6.0.x KVM on RHEL 8.10 while maintaining investments in the existing Dell R640 hardware platform.
- Existing ASP S8300 5.1.x have a migration path to ASP R6.0.x KVM on RHEL 8.10.

The ASP 130 R6.0.x server is an Avaya customized Dell R660xs server staged and loaded with KVM on Red Hat Enterprise Linux 8.10 and shipped to an Avaya customer for installation of applications in a virtual environment. The ASP S8300 R6.0.x is a blade server loaded with KVM on Red Hat Enterprise Linux 8.10 and shipped to an Avaya customer for installation of applications in a virtual environment. The R640s are nearing End of Sale and do not ship from Avaya's integrator with KVM on RHEL 8.10. The R640 always requires a migration from ASP R4.x, R5.x, AVP (ASP 120) to ASP R6.0.x software KVM on RHEL 8.10.

For detailed information about each specific release, see the latest Avaya Solutions Platform 130 Release Notes.

Avaya Solutions Platform 100 series overview

Avaya Solutions Platform (ASP) is a turnkey hardware solution that is available for many Avaya applications. Avaya Solutions Platform 100 series offers a single virtualized or bare metal server delivering Avaya unified communication and contact center applications. Refer to your product application specific documentation.

The Avaya Solutions Platform 100 series is comprised of three models:

1. ASP 110: This is a bare metal server used by specific Avaya applications. The applications determine which Operating System (OS) is preloaded (application dependent) at Avaya's Integrator. New ASP 110 base servers consist of Dell PowerEdge R660xs and Dell PowerEdge R360xe. Reference application specific documentation for information on ASP 110 servers.
2. ASP 120: This is the Dell R640 shipped from Avaya's Integrator with Avaya Virtualized Platform (AVP) AVP 8.1 preloaded. The ASP 120 is synonymous with Appliance Virtualization Platform (AVP) and required AVP 7.1.3.3 or AVP 8.0.1 or later. ASP 120 shipped with AVP 8.1 preloaded. AVP 8.1 was the final release and ASP 120 is not supported with Avaya Aura® 10.x. Existing ASP 120 can migrate to ASP 130 R6.0.x.
3. ASP 130: This is the Dell R660xs for ASP 6.0.x and ships from Avaya's Integrator with KVM on Red Hat Enterprise Linux 8.10 preloaded. The ASP 130 R4.0 and 5.x versions used the Dell R640 on ESXi 6.5/7.0. Existing ASP 130 R4.0 and 5.x can migrate to ASP 6.0.x KVM on RHEL 8.10.

Note:

This document focuses on Avaya Solutions Platform 130 Appliance (ASP 130) only. Avaya Solutions Platform 130 Appliance R6.0.x utilizes KVM on Red Hat Enterprise Linux 8.10. Avaya does not permit or support the repurposing of servers that deviate from their original integrated configuration.

Avaya Solutions Platform Appliance profiles

In the Avaya Solutions Platform 100 Series, server constructs are shared among Avaya Solutions Platform 110 Appliance and Avaya Solutions Platform 130 Appliance.

Hardware configurations for each profile are locked. The addition of memory, storage, or changing out the NICs is not permitted and results in an unsupported configuration.

Note:

A1SC configurator algorithms reserve capacity/resources for the hypervisor, migrations, upgrades.

Dell R660XS XL

Table 1: Intel Emerald Rapids CPUs

Appliance Constructs	A1 (replaces P2)	A2 (replaces P3)	A3 (replaces P5)	A31 (replaces P51)
Rack Mount Unit (RMU)	1U	1U	1U	1U
Intel CPU	4510	4510	6526Y	6526Y
Number of CPUs	1	2	2	2
Number of Cores/Server	12	24	32	32
Core Frequency (GHz)	2.4	2.4	2.8	2.8
Number of Fans	5	7	7	7
Number of 8 GB RDIMMs	-	-	-	-
Number of 16 GB RDIMMs	4	8	16	16
Memory/Server in GB	64	128	256	256
10K 2.5 INCH SAS HDD Size GB **Note:** Shipping of 1.2 TB HDDs from 2QCY2026	600/1200	600/1200	600/1200	600/1200
Number of HDDs 2.5 INCH 10K SAS	5	6	6	8
RAID Options	5	6	6	6
Usable Virtual Disk Capacity (600 GB HDDs)	1726 GiB / 1853 GB	1726 GiB / 1853 GB	1726 GiB / 1853 GB	2619 GiB / 2812 GB
Usable Virtual Disk Capacity (1.2 TB HDDs)	~3.433 TiB / 3.775 TB	~3.433 TiB / 3.775 TB	~3.433 TiB / 3.775 TB	~5.178 TiB / 5.693 TB
Network 1 Gb ports (Base-T)	2 (onboard)	2 (onboard)	2 (onboard)	2 (onboard)
Network 1 Gb ports (Base T-OCP3)	4	4	4	4
Network 10/25 Gb ports (BCM57414)	0	0	2*	2*
TPM	Yes	Yes	Yes	Yes
Power Supplies (800 W)	2	2	2	2
Rail Kit	Y	Y	Y	Y
DVD-ROM Drive	N	N	N	N

* Must be at ASP R6.0.0.4 or later for ASP 130 to recognize 10/25 GB card. The R660xs must be at BIOS FW v2 or later.

Note:

- Usable Virtual Disk Capacity has been reduced by 20% to allow for upgrades and storage overhead.

- Due to supplier constraints, the 600GB hard drive utilized in the ASP 130 R660xs server can no longer be sourced.

  Beginning 2QCY2026, Avaya fulfills all ASP 130 R660xs R6.0.x server orders using 1.2 TB hard drives.

  In the case of a maintenance scenario, if a failed 600 GB hard drive is replaced with a 1.2 TB hard drive, the RAID controller will configure the 1.2 TB hard drive to run as a 600 GB hard drive in the RAID array.

Dell R640 XL

Table 2: Intel Skylake CPUs

Appliance Constructs	Profile #2	Profile #3	Profile #4	Profile #5	Profile #51 (ASP 130 Only)
Rack Mount Unit (RMU)	1U	1U	1U	1U	1U
Intel Skylake CPU	S-4114	S-4114	G-6132	G-6132	G-6132
Number of CPUs	1	2	1	2	2
Number of Cores/Server	10	20	14	28	28
Core Frequency (GHz)	2.2	2.2	2.6	2.6	2.6
Number of Fans	5	8	5	8	8
Number of 8GB RDIMMs	3	6	-	-	-
Number of 16 GB RDIMMs	-	-	6	12	12
Memory/Server in GB	24	48	96	192	192
10K 2.5 INCH SAS HDD Size GB	600	600	600	600	600
Number of HDDs 2.5 INCH 10K SAS	3 (+2 for migration to ASP R6.0.x)	4 (+2 for migration to ASP R6.0.x)	4 (+2 for migration to ASP R6.0.x)	6	8
RAID Options	5	6	6	6	6
Usable Virtual Disk Capacity	1726 GiB / 1853 GB	1726 GiB / 1853 GB	1726GiB / 1853 GB	1726 GiB / 1853 GB	2619 GiB / 2812 GB
Network 1 Gb ports (Base-T)	6 (4LOM, 2 PCIe	6 (4LOM, 2 PCIe	6 (4LOM, 2 PCIe	6 (4LOM, 2 PCIe	6 (4LOM, 2 PCIe
Network 1 Gb ports (Base T-OCP3)	-	-	-	-	-
Network 10/25 Gb (BCM57414)	-	-	-	ASP 110 for SBCE only	-
TPM	-	-	-	-	-
Power Supplies (750 W)	2	2	2	2	2
Rail Kit	Y	Y	Y	Y	Y
DVD-ROM Drive	Y	Y	Y	Y	Y

Note:

Usable Virtual Disk Capacity has been reduced by 20% to allow for upgrades and storage overhead.

Note:

Usable Virtual Disk Capacity is also reduced by 60GiB for Avaya RHEL 8.10 OS.

Table 3: Intel Cascade Lake CPUs

Appliance Constructs	Profile #2	Profile #3	Profile #4	Profile #5	Profile #51 (ASP 130 Only)
Rack Mount Unit (RMU)	1U	1U	1U	1U	1U
Intel Cascade Lake CPU	S-4210	S-4210	G-6226R	G-6226R	G-6226R
Number of CPUs	1	2	1	2	2
Number of Cores/Server	10	20	16	32	32
Core Frequency (GHz)	2.2	2.2	2.9	2.9	2.9
Number of Fans	5	8	5	8	8
Number of 8GB RDIMMs	3	6	-	-	-
Number of 16 GB RDIMMs	-	-	6	12	12
Memory/Server in GB	24	48	96	192	192
10K 2.5 INCH SAS HDD Size GB	600	600	600	600	600
Number of HDDs 2.5 INCH 10K SAS	3 (+2 for migration to ASP R6.0.x)	4 (+2 for migration to ASP R6.0.x)	4 (+2 for migration to ASP R6.0.x)	6	8
RAID Options	5	6	6	6	6
Usable Virtual Disk Capacity	1726 GiB / 1853 GB	1726 GiB / 1853 GB	1726 GiB / 1853 GB	1726 GiB / 1853 GB	2619 GiB / 2812 GB
Network 1 Gb ports (Base-T)	6 (4LOM, 2 PCIe	6 (4LOM, 2 PCIe	6 (4LOM, 2 PCIe	6 (4LOM, 2 PCIe	6 (4LOM, 2 PCIe
Network 1 Gb ports (Base T-OCP3)	-	-	-	-	-
Network 10/25 Gb (BCM57414)	-	-	-	ASP 110 for SBCE only	-
TPM	-	-	-	-	-
Power Supplies (750 W)	2	2	2	2	2
Rail Kit	Y	Y	Y	Y	Y
DVD-ROM Drive	Y	Y	Y	Y	Y

Note:

Usable Virtual Disk Capacity has been reduced by 20% to allow for upgrades and storage overhead.

Note:

Usable Virtual Disk Capacity is also reduced by 60GiB for Avaya RHEL 8.10 OS.

Chapter 3: R660xs Front and Rear Server Views

Front view of Dell™ PowerEdge™ R660xs Server

Note:

The Dell R660xs does not contain a CD-ROM drive. All media installation is done using USB.

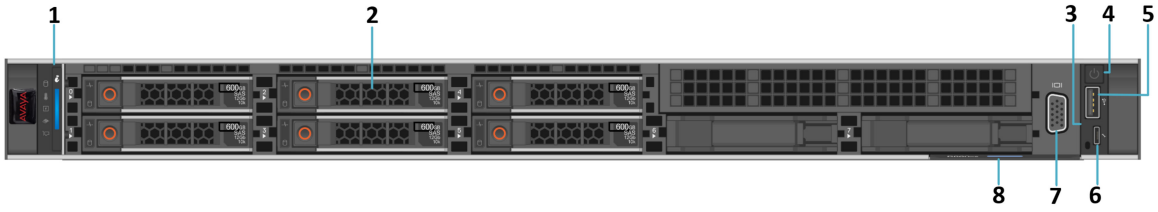


Figure 1: Front View of Dell PowerEdge R660xs With 600 HDD – Single/Dual CPU Server

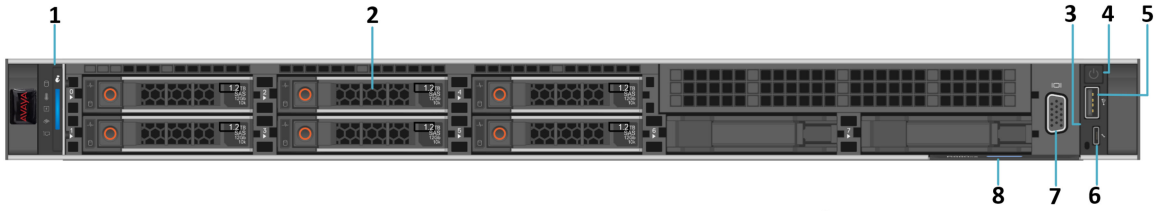


Figure 2: Front View of Dell PowerEdge R660xs With 1.2 TB HDD– Single/Dual CPU Server

No.	Item	Icon	Description
1	Left control panel	NA	Displays the system health, system ID, and status LED indicators. • Status LED: Enables you to identify failed hardware components. There are up to five status LEDs and an overall system health LED (chassis health and system ID) bar.
2	Drive slots	N/A	Enables installation of hard disk drives (HDDs) that are supported on your system.
3	Right control panel	NA	Contains the power button, USB port, iDRAC Direct micro port, and the iDRAC Direct status LED.

Table continues…

No.	Item	Icon	Description
4	Power button		Indicates if the system is powered on or off. Press the power button to manually power on or off the system. **Note:** Press the power button to gracefully shut down an ACPI-compliant operating system.
5	USB 2.0 port		The USB is a 4-pin connector and 2.0-compliant. This port enables you to connect USB devices to the system.
6	iDRAC Direct micro port		The iDRAC Direct port (Micro-AB USB) enables you to access the iDRAC direct features.
7	VGA port		Enables connection to the display device (console) of the system. If the user connects to the front VGA port, the rear VGA port does not function.
8	Express service tag	NA	The Express Service Tag is a slide-out label panel that contains system information such as Service Tag, NIC, MAC address, and so on. If you have opted for the secure default access to iDRAC, the Information tag will also contain the iDRAC secure default password.

Left control panel view

The system health and system ID indicator is located on the left control panel of the system.

Figure 1: System health and system ID indicator

System health and system ID indicator code	Condition
Solid blue	Indicates that the system is powered on, is healthy, and system ID mode is not active. Press the system health and system ID button to switch to system ID mode.
Blinking blue	Indicates that the system ID mode is active. Press the system health and system ID button to switch to system health mode.
Solid amber	Indicates that the system is in fail-safe mode. If the problem persists, additional investigation is required.
Blinking amber	Indicates that the system is experiencing a fault. Check the System Event Log for specific error messages.

Front LCD panel

Use Front LCD panel to identify hardware status and problems with the server.

The LCD panel is available only on the optional front bezel. The optional front bezel is hot pluggable.

The LCD panel provides system information, status, and error messages, to indicate if the system is operating correctly.

- The LCD backlight is white during normal operating condition
- When the system needs attention, the LCD backlight turns amber, and displays an error code followed by descriptive text.
- When the system turns off and there are no errors, LCD enters standby mode after five minutes of inactivity. Press any button on the LCD to turn it on.
- If the LCD panel stops responding, remove the bezel and reinstall it.
- The LCD backlight remains turned off if LCD messaging is turned off using the iDRAC utility, the LCD panel, or other tools.

Note:

If the system is connected to a power source and an error is detected, the LCD turns amber regardless of whether the system is turned on or off.

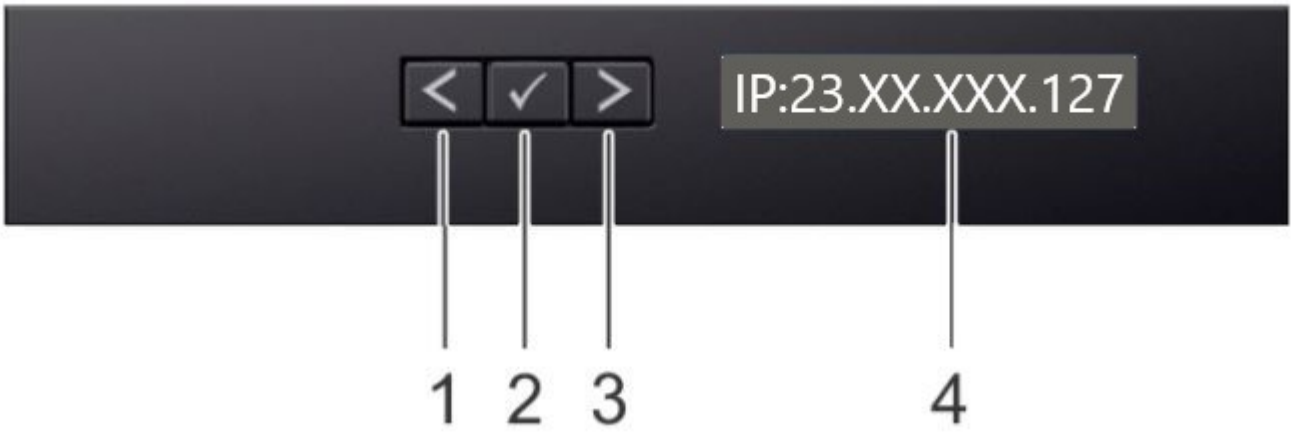


Figure 2: Front LCD panel

Item	Button	Description
1	Left	Move the cursor back in one-step increments
2	Select	Select the menu item highlighted by the cursor
3	Right	Move 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 • The display stops scrolling when the button is released. After 45 seconds of inactivity, the display starts scrolling.
4	LCD display	Displays system information, status, and error messages or iDRAC IP address. The name **Avaya** will appear in this field if there are no errors to display

LCD screen

Note:

This section is for informational purposes only. Avaya does not recommend utilizing the LCD screen for system modifications.

Viewing the Home Screen

About this task

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. When the system turns off and there are no errors, the LCD display enters standby mode after five minutes of inactivity. Press any button on the LCD display to turn it on.

Procedure

1. To view the Home screen, press one of the three navigation buttons (**Select**, **Left**, or **Right**).
2. To navigate to the Home screen from another menu, complete the following steps:
   a. Press and hold the navigation button till the up arrow is displayed.
   b. Navigate to the **Home** icon using the up arrow.
   c. Select the **Home** icon.
   d. On the Home screen, press the **Select** button to enter the main menu.

LCD screen menus

View menu

Note:

When you select an option in the View menu, you must confirm the option before proceeding to the next action.

Option	Description
iDRAC IP	Displays the IPv4 or IPv6 addresses for iDRAC9. Addresses include DNS (Primary and Secondary), Gateway, IP, and Subnet (IPv6 does not have Subnet). **Note:** For iDRAC support, refer to application documentation.
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.

Setup menu

Note:

When you select an option in the Setup menu, you must confirm the option before proceeding to the next action.

Option	Description
iDRAC	Select **DHCP** or **Static IP** to configure the network mode. If **Static IP** is selected, the available fields are **IP**, **Subnet (Sub)**, and **Gateway (Gtw)**. Select **Setup DNS** to enable DNS and to view domain addresses. Two separate DNS entries are available.
Set error	Select **SEL** to view LCD error messages in a format that matches the IPMI description in the SEL. This enables you to match an LCD message with an SEL entry. Select **Simple** to view LCD error messages in a simplified user-friendly description.
Set home	Select the default information to be displayed on the Home screen.

Status LED indicators

Note:

The status LED indicators are always off and only turns on to a solid amber if any error occurs.

Icon	Button	Condition	Resolution
	Drive indicator	The indicator turns solid amber if there is a drive error.	• Check the System Event Log to determine if the drive has an error. • Run the appropriate online diagnostics test and restart the system and run embedded diagnostics (ePSA). • If the drives are configured in a RAID array, restart the system, and enter the host adapter configuration utility program.
	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	Ensure that none of the following conditions exist: • A cooling fan has been removed or has failed. • System cover, air/cooling shroud, memory module blank, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed.

Table continues…

Icon	Button	Condition	Resolution
	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the System Event Log or system messages for the specific issue. If it is due to a problem with the PSU, check the status indicator on the PSU. Reseat the PSU.
	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the System Event Log or system messages for the location of the failed memory. Reseat the memory module.
	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers from Avaya for the PCIe card. Reinstall the card.

Rear view of Dell™ PowerEdge™ R660xs Server

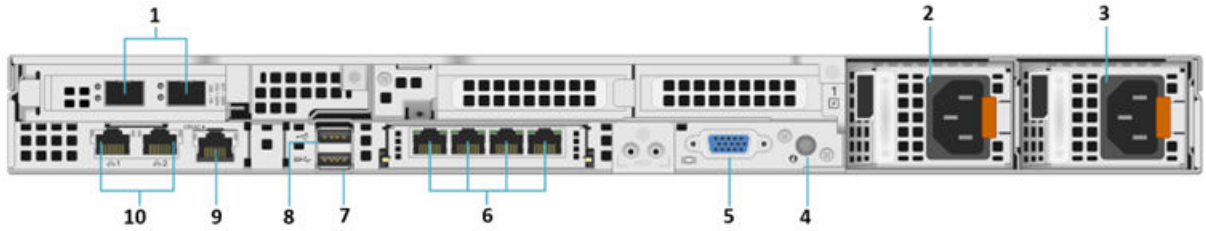


Figure 1: Rear View of Dell PowerEdge R660xs – Single/Dual CPU Server Profiles A3-A31

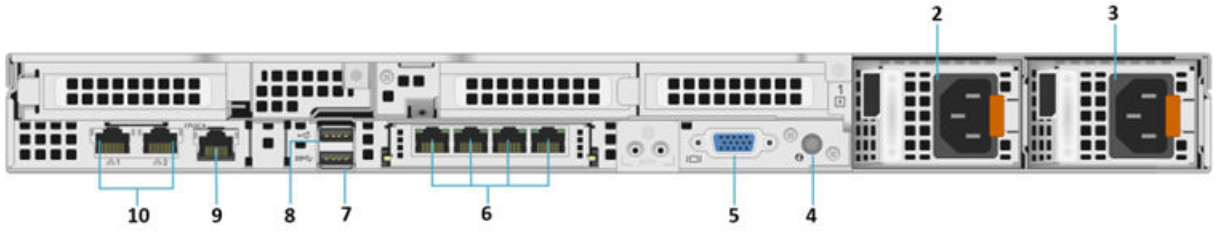


Figure 2: Rear View of Dell PowerEdge R660xs – Single/Dual CPU Server Profiles A1-A2

Table 4: Back View of Dell PowerEdge R660xs Server

No.	Item	Icon	Description
1	PCIe expansion riser card 1 slot(1)	N/A	Avaya Solutions Platform 1XX systems with R660xs server have a 2x10/25 GbE Broadcom NIC installed (BCM57414) in PCIe slot 1. In KVM on RHEL 8.10 these network interfaces will be displayed as: ens1f0np0, ens1f0np1. (Right-to-left assignment if viewing from rear of the server). Available for use beginning with ASP R6.0.0.4.0 and with BIOS FW v2 or later. This Network Card is only populated in Profiles: A3-A31.
2	Power supply unit (2)		PSU1 is the primary PSU of the system. Can accept voltages from 100-240VAC.
3	Power supply unit (2)		PSU2 is the secondary PSU of the system. Can accept voltages from 100-240VAC.
4	System identification button (ID)		Press the system ID button: • To locate a particular system within a rack. • To turn the system ID on or off. To reset iDRAC, press and hold the button for 16 seconds.
5	VGA port		Enables connection to the display device (console) of the system. If the user is connected to the front VGA port, the rear VGA port will not function.
6	OCP NIC ports (4)	N/A	4x1 GbE OCP NIC card. (eno12399, eno12409, eno12419 and eno12429 – Left to right viewing from rear of the server).
7	USB 3.0 port		This USB port is a 9 pin connector and 3.0-compliant. This port enables you to connect USB devices to the system (use for bootable ISO).
8	USB 2.0 port		This USB port is a 4 pin connector and 2.0-compliant. This port enables you to connect USB devices to the system.
9	iDRAC9 dedicated port		If enabled and cabled allows you to remotely access iDRAC.
10	NIC ports (2)		2 x 1 GbE NIC ports integrated on the system mother board. (eno8303 {Management} and eno8403 {Services} ports)

Chapter 4: R660xs Maintenance Replaceable Components

Electrostatic discharge safety

Electrostatic discharge (ESD) is the transfer of an electrostatic charge between objects at different electrical potentials. ESD can change the electrical characteristics and degrade or destroy a semiconductor device. ESD can also disrupt the normal operation of an electronic system by causing equipment malfunction or failure.

To dissipate or neutralize electrostatic charges, use proper grounding and conductive or dissipative materials.

Electrostatic alert:

ESD can damage electric circuits. Do not touch electric hardware unless you wear a grounding wrist strap or other static-dissipating device.

Proper antistatic packaging effectively shields products from electrostatic charges and reduces the charge generation caused by product movement within the container.

External maintenance field replacement units

Hard Disk Drives (HDDs) and power supplies are hot-swappable.

Note:

Due to supplier constraints, the 600 GB hard drive utilized in the ASP 130 R660xs server can no longer be sourced. The information is left for historical purposes only. Utilize the 1.2 TB HDD for any required HDD FRU.

FRU Part Number	Description	Hot-swappable?
700520432	ASP DELL R660 1200GB 10K SAS 2.5 INCH HDD FRU	Y

Table continues…

FRU Part Number	Description	Hot-swappable?
700519851	ASP DELL R660 600GB 10 K SAS 2.5 INCH HDD FRU **Note:** No longer available.	Y
700519849	ASP DELL R660 800W AC POWER SUPPLY UNIT FRU	Y

Internal field replacement units

Internal Field Replaceable Units (FRUs) require the server to be shutdown and the cover removed to access and replace the FRU.

FRU Part Number	Internal field replacement units	Hot-swappable?
700519850	ASP DELL R660 CHASSIS FAN FRU	Y (will depend on physical server access as the server lid must be removed while server is running and may not be logistically possible.)
700519852	ASP DELL R660 16GB MEMORY MODULE FRU	N
700519846	ASP DELL R660 Broadcom QUAD PORT OCP FRU	N
700519844	ASP DELL R660 H755 RAID CARD FRU (H755 includes battery)	N
700519848	ASP DELL R660 10/25G DUAL PT NIC FRU Available only for Dell R660xs Profiles A3 & A31 beginning with ASP R6.0.0.4.0 and with BIOS FW v2 or later.	N

Note:

With the introduction of the Dell R660xs, the RAID battery is no longer a separate orderable entity. In the event of a failure of the RAID battery, you need to order a replacement RAID H755 Card.

Server Field Replaceable Unit

With the introduction of the Dell R660xs, the server FRU model paradigm changes from the Dell R640. The Dell R660xs server FRU is a complete server replacement for Profiles A1, A2, A3 and

contains all necessary components. Profile A31 has the same server FRU code as A3 but WILL require moving two HDDs from the failed A31 server.

For more information, refer to Chapter 13: R660xs Server FRU replacement.

Chapter 5: R660xs iDRAC 9 Direct Connect

iDRAC 9 Direct Connect

The iDRAC 9 interface available on the Dell R660xs can be accessed using a micro USB 2.0 port located on the front right corner of the server. Diagnosing and troubleshooting the server can be improved by utilizing this port. The iDRAC 9 will be referenced in the following sections for troubleshooting components of the R660xs server.

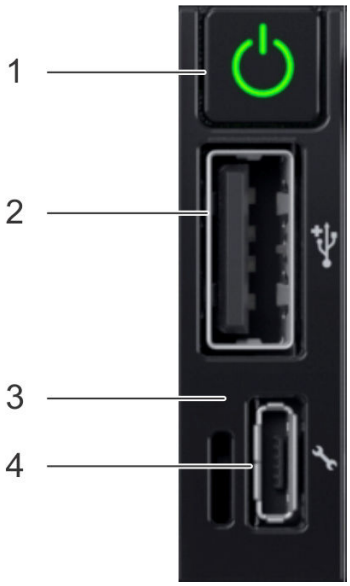


Figure 3: iDRAC connectivity

Item	Indicator button	Description
1	Power button	Indicates if system is turned on or off. Press the power button to manually turn on or off the system
2	USB Port	Select the menu item highlighted by the cursor

Table continues…

Item	Indicator button	Description
3	iDRAC Direct LED	The iDRAC Direct LED indicator lights up to indicate that the iDRAC Direct port is actively connected to a device
4	iDRAC Direct port	iDRAC Direct port is micro USB 2.0 compliant. This port enables access to the iDRAC Direct features

Direct Connect iDRAC9 Access Details:

Connect a micro-USB cable between the iDRAC micro-USB port located on the right front corner of the server to a USB type A port of a laptop (see figure below). Launch a web browser session from the connected laptop using IP address `169.254.0.3`. The iDRAC GUI console will be displayed.

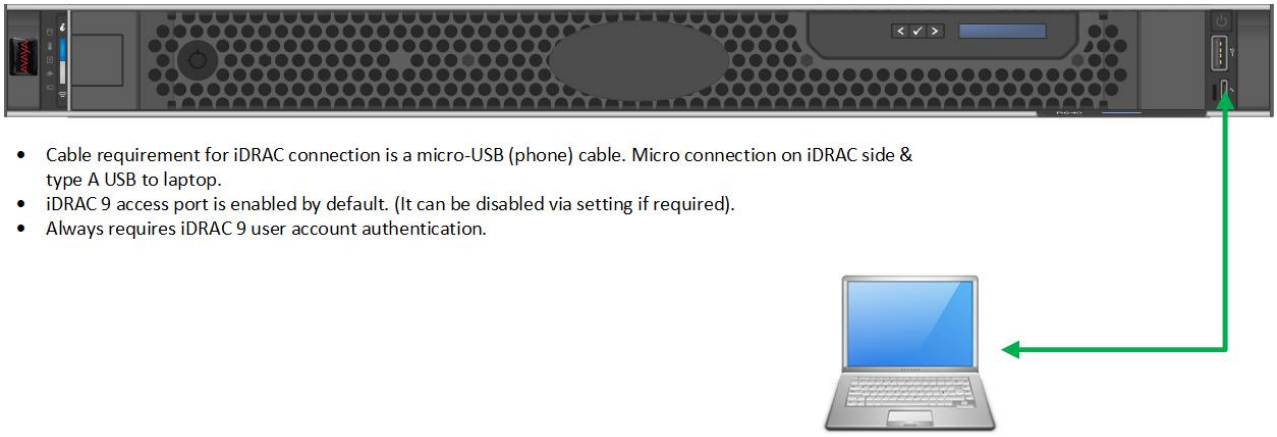


Figure 4: iDRAC access

iDRAC login:

If the iDRAC interface has already been configured, then the username and password will need to be used for logging into the iDRAC interface. If the account has not been set up then the login details will be username=*root* and the password will be located on the pull-out toe tag next to the iDRAC Micro USB port. Avaya Solutions Platform 130 servers ship with the iDRAC9 IPV4 service disabled for security purposes, but the local USB port is still accessible so only the password is required for logging into the iDRAC. Refer to the Avaya Solutions Platform 130 Series iDRAC9 Best Practices document or *Integrated Dell Remote Access Controller 9 User's Guide* available on the vendor's website for more information.

Chapter 6: R660xs Hard Disk Drive

Hard Disk Drive

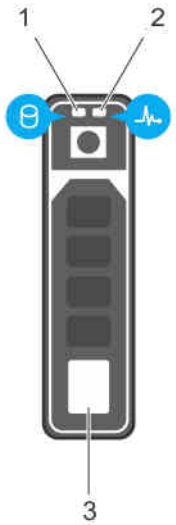
Symptoms

The following indicate hard drive problems:

- Server status LED or drive LED indicator patterns indicate that drives are failing or failed. See Status LED indicators on page 22.
- Drive failures are reported/alarmed by the iDRAC.
- Noisy hard drive.
- An Avaya application alarm indicates an active disk drive failure.
- An Avaya application does not process the drives.
- Data is inaccessible.
- Server response time is slower than usual.

Hard drive indicator patterns

Each hard drive carrier has an activity LED indicator and a status LED indicator. The indicators provide information about the current status of the hard drive. The activity LED indicator indicates whether the hard drive is currently in use or not. The status LED indicator indicates the power condition of the hard drive.



Indicator ID	Description
1	Hard drive activity indicator
2	Hard drive status LED indicator
3	Hard drive

HDD LED indicator patterns

Sr. No.	LED Pattern	Condition
1	Flashes green twice per second.	Identifying drive or preparing for removal.
2	Off	Drive ready for insertion or removal. **Note:** The drive status indicator remains off until all hard drives are initialized after the system is turned on. Drives are not ready for removal during this time.
3	Flashes green, amber, and then turns off.	Predicted drive failure.
4	Flashes amber four times per second.	Drive failed.
5	Flashes green slowly.	Drive rebuilding.
6	Steady green.	Drive online.
7	Flashes green for three seconds, amber for three seconds, and then turns off after six seconds.	Rebuild stopped.

Troubleshooting a hard disk drive

About this task

Use this procedure to troubleshoot hard disk drive (HDD) problems on the drive: R660xs SRVR 600 GB 10K SAS 2.5 INCH HDD.

Caution:

This troubleshooting procedure can erase data stored on the hard drive. Before you proceed, back up files from the hard drives.

Procedure

1. Ensure that there are no loose connections and all drives are fully seated.
2. Check hard drive LED indicator patterns for indication of problems. For more information, see Status LED indicators on page 22 and Hard drive indicator patterns on page 30.
3. View LCD display for any HDD error messages.
4. Ensure drive blanks are installed properly when the server is operating otherwise drives may overheat and cause sluggish response or drive failure.
5. Ensure the replacement drives within an array are the same capacity size or larger.

6. Ensure the replacement drives within an array are the same drive type, such as, SAS, SATA, or SSD. Currently, the server employs SAS HDDs.
7. ASP R6.0.0.1 or later includes **`perccli`** command support that enables users to query HDD information. For more information, see Chapter 31: Dell R660xs and R640 perccli debugging on page 162.
8. If you can access the iDRAC interface, log in to the iDRAC web interface and view the status from **Storage** tab:
    a. Check summary of disks and view virtual and physical disk status.
    b. Ensure virtual disk is online and reporting no errors.
    c. If error persists, replace failed or failing drive. See Replacing a hard disk drive on page 94.
    d. If no errors are observed from iDRAC storage, observe logs reported on the iDRAC dashboard. If no errors are reported go to Maintenance/System Event logs. View logs for any HDDs events or errors reported.
    e. If no HDD errors can be detected go to step 9.
9. If you are not using iDRAC and running diagnostics is required, reboot the server according to Avaya application procedures:

    Warning:

    This step is service impacting, conduct this activity during a customer approved maintenance window.

    a. Connect a monitor, USB keyboard, and mouse to Dell R660xs server.
    b. Reboot the server. From the Dell splash screen, press `F2` to go to **System Setup** > **iDRAC Settings** > **System Event Log**.
    c. View the event log for any errors relating to an HDD failure or HDD predictive failure. If an HDD is identified as bad, replace the HDD according to Replacing a hard disk drive on page 94.
    d. If no failure can be isolated, back out of System Setup menu and reboot system, and go to next step.
10. If running diagnostic or further HDD debugging is required, reboot server according to Avaya application procedures:

    Warning:

    This step is service impacting, conduct this activity during a customer approved maintenance window.

    a. Connect a monitor, USB keyboard, and mouse to Dell R660xs server.
    b. Reboot server. From the Dell splash screen, press `F10` to go to **Lifecycle Controller**, and cancel out of Setup Wizard if prompted.

c. Select **Hardware Diagnostics** > **Run Hardware Diagnostics**.

   Testing of the server begins. You can abort the testing to select specific component testing by pressing `Esc`. Select `+` to run individual tests. Select help to see testing options.

d. Select appropriate HDDs to be tested by selecting Hard Drive Icons. You can select thorough testing if desired. You can use the **Results** tab to view pass or failure of a device.

e. If a failed or failing HDD is detected, replace the HDD according to the Replacing a hard disk drive on page 94 procedure.

Replacing a hard disk drive

About this task

Use this procedure to replace a failed R660xs Hard Drive for either of the following:

- R660xs SRVR 600GB 10K SAS 2.5 INCH HDD
- R660xs SRVR 1200GB 10K SAS 2.5 INCH HDD

In R660xs servers shipped with 600 GB HDDs, a failed HDD may be replaced with either a 600 GB HDD or 1.2 TB HDD as 600 GB HDDs are being replaced due to availability. In R660xs servers shipped with 1.2 TB HDDs, a failed HDD must be replaced with 1.2 TB HDDs.

The following are some helpful guidelines for replacing a hard disk drive:

- Drives must be the same capacity to provide the greatest storage space efficiency when drives are grouped together into the same drive array.

  Note:

  If larger drives are certified by Avaya in the future, they can be used, but size will be limited to the smallest capacity drives.

  Illustrations show the 600 GB HDD label. The 1.2 TB HDDs use the same form factor but the label will reflect 1.2TB.

- Drives in the same logical volume must be of the same type. Avaya does not support mixing SAS, SATA, and SSD drives in the same logical volume. Currently, the server employs SAS HDDs.
- Only use hard drives that have been tested and approved by Avaya for use with the hard-drive backplane.
- When installing a hard drive, ensure that the adjacent drives are fully installed. Inserting a hard-drive carrier and attempting to lock its handle next to a partially installed carrier can damage the partially installed carrier's shield spring and make it unusable.
- All hard drives connect to the system board through the hard-drive backplane. Hard drives are supplied in hot-swappable hard-drive carriers that fit in the hard-drive slots.
- When you install a hard drive, allow enough time for the array to rebuild. Be aware that high capacity hard drives can take a number of hours to rebuild.
- Hard drive LED indicators can also be used to know the HDD rebuild status.

- The iDRAC can be used for viewing HDD status.

Caution:

- When a replacement hot-swappable hard drive is installed into the system, the hard drive automatically begins to rebuild. Ensure that the replacement hard drive is blank or contains data that can be over-written. Any data on the replacement hard drive is lost after the hard drive is installed.
- Do not turn off or reboot your system while the hard drive is being rebuilt. Rebooting the system can cause a hard drive failure.

Caution:

This troubleshooting procedure can erase data stored on the hard drive. Before you proceed, back up files from the hard drives.

Important:

Drives are hot-swappable, so power down of a server is not required or recommended. However, you must replace only one drive at a time allowing for full rebuild between replacement of drives.

If replacing all the HDDs at once, a power down of the server is required.

For more information on importing drives from a failed server, see *Chapter 32: Dell R660xs and R640 RAID Import Procedures*.

If all HDDs are replaced at once, then a new virtual drive must be created and software reinstalled. For more information, see the *RAID Configuration* section of the Installing the Avaya Solutions Platform 130 Series R6.0.x guide.

Procedure

1. Remove failed or failing hard drive as indicated by HDD LEDs, application alarms, iDRAC, logs or diagnostics.

   A single hard drive can be removed and replaced on RAID 5, RAID 6 (ASP 130). Other RAID configurations may exist on ASP 110 R6.0.x systems. The Avaya application(s) will continue to run. The RAID controller will run in a degraded mode until a replacement HDD is installed and rebuilt.

   a. Remove the front bezel if applicable and locate the failed or failing HDD.

   b. Press the release button to open the drive carrier release handle.

   c. Holding the handle, slide the drive carrier out of the drive slot.

Figure 5: Removing HDD

2. Install the replacement HDD using the following steps:
   a. Press the release button on the front of the drive carrier to open the release handle.
   b. Insert the drive carrier into the drive slot and slide until the drive connects with the backplane.
   c. Close the drive carrier release handle to lock the drive in place.

Figure 6: Inserting HDD

   d. Drive should start to rebuild as indicated by appropriate LEDs.
   e. View RAID status from iDRAC interface or view hard drive LED indicator patterns to see drive rebuild status.

f. For more information, see Status LED indicators on page 22 and Hard drive indicator patterns on page 30.

The typical drive rebuild time is 30 minutes to 2 hours depending upon the size of HDD and the system load.

Chapter 7: R660xs Power Supplies

Power supply problems

Problems

Refer to the following points to prevent basic power supply problems:

- Avoid loose connections. For example, loose power cables.
- Check the power supply handle LED and ensure it indicates that the power supply is working properly.
- Use only power supply units supplied by Avaya.
- After installing a power supply unit, allow some time for the system to recognize the power supply unit and determine if it is working properly.

AC PSU status indicator

AC power supply units (PSUs) have an illuminated translucent handle that serves as an indicator.

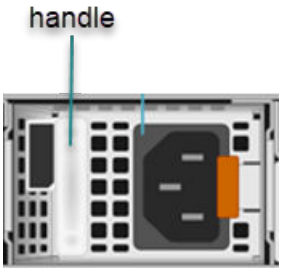


Figure 7: AC status indicator

Power Indicator Pattern	Condition
Green	A valid power source is connected to the PSU and the PSU is operational.
Blinking amber	Indicates a problem with the PSU.
Not illuminated	Power is not connected.

Table continues…

Power Indicator Pattern	Condition
Blinking green	When the firmware of the PSU is being updated, the PSU handle blinks green. **Caution:** Do not disconnect the power cord or unplug the PSU when updating firmware. If firmware update is interrupted, the PSUs do not function.
Blinking green and turns off	When hot-plugging a PSU, the PSU handle blinks green five times at a rate of 4 Hz and turns off. This indicates a PSU mismatch with respect to efficiency, feature set, health status, or supported voltage. **Caution:** • If two PSUs are installed, both the PSUs must have the same type of label. For example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition or failure to turn the system on. • When correcting a PSU mismatch, replace only the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and unexpected system shutdown. To change from a high output configuration to a low output configuration or vice versa, you must turn off the system • Combining AC and DC PSUs is not supported and triggers a mismatch.

DC Power Supply

Important:

The DC power supply is not supported by Avaya.

Troubleshooting a power supply

Before you begin

Ensure that only trained service technician troubleshoot and perform the repairs.

You should only perform simple troubleshooting and minor repairs as authorized in this documentation, or as directed by Avaya services personnel. Damage due to servicing that is not authorized by Avaya is not covered by warranty or maintenance.

Procedure

Note:

Avaya strongly recommends that all servers are protected with an Uninterruptible Power Supply (UPS) for power surge and interruption protection.

1. To troubleshoot possible power source problems:
   a. If the system is off, press the power button to ensure that your system is turned on. If the power indicator does not glow when the power button is pressed, press the power button firmly.
   b. Ensure UPS is functioning properly.
   c. Plug another device into the power outlet to be sure the outlet is functional. Also, be sure the power source meets applicable standards.
   d. Replace the power cord with a known functional power cord to be sure it is not faulty.
   e. Ensure that no loose connections exist. For example, loose power cables.
   f. Have a qualified electrician check the line voltage to be sure it meets the required specifications.

   If power source is not the problem, continue with steps below to troubleshoot power supply unit.
2. Check LCD display, status LED indicators and power supply AC Status indicators for any power supply problems.
3. Reseat the failed power supply by removing and reinstalling it.
   - Step 3 assumes that you have a working second power supply.
   - After installing a power supply, allow several seconds for the system to recognize the power supply and to determine if it is working properly.
4. Ensure that no loose connections exist. For example, loose power cables.
5. If server is powered off, press the Power On/Standby button to be sure it is on. If the server has a Power On/Standby button that returns to its original position after being pressed, be sure you press the switch firmly. For more information consult the system power LED status.
6. Check the power supply AC status indicators, ensure they indicate that each power supply is working properly. If the status indicates a problem with a power supply (amber or off), then check the power source. If the AC power source is working properly, then replace the power supply.

   Note:

   Ensure that you use only Avaya approved power supply units with the Extended Power Performance (EPP) label on the back.
7. If iDRAC interface is utilized, log in to the iDRAC web interface, and click the **System/ Power Supplies** tab to view the power supply health.
   a. From the dashboard, check Recent Logs and System Event Logs.
   b. Check for any power supply entries indicating a problem.
   c. If you observe any failed power supply or power supply with error, replace failed or failing power supply. See Replacing a power supply on page 101.

d. If no errors are observed on the iDRAC dashboard and no power supply problems are detected, go to step 8.

8. Perform the following steps for additional power supply debugging:

   a. Connect a monitor, USB keyboard, and mouse to Dell R660xs Server, and from Dell splash screen, press `F10` to go to Lifecycle controller and run the diagnostics from the console.

   b. Select **Hardware Diagnostics** > **Run Diagnostics** and navigate to applicable diagnosis tests.

      This begins the testing of a server. You can abort the testing to select specific component by pressing `ESC`.

      No power supply tests can be run, but the **System Health** tab shows status of power supply 1 and power supply 2 as shown in the following illustration. The event log tab should also display any event involving the power supplies. The picture below is an example and some parameters reported may vary. For the ASP R660xs, PSU 1 is primary and PSU 2 is hot standby.

Power			
Sensor	Current	High	Low
PS1 Current 1	1.80 AMP	1.80 AMP	1 AMP
PS2 Current 2	0 AMP	0.80 AMP	0 AMP
PS1 Voltage 1	204 V	204 V	204 V
PS2 Voltage 2	204 V	204 V	204 V
System Board Pwr Consumption	338 Watts	364 Watts	338 Watts

      For additional information, see Dell PowerEdge R660xs Installation and Service Manual.

Next steps

If the part is defective, continue with the removal and replacement procedures.

Replacing a power supply

About this task

Use this procedure to replace 800 W AC power supplies in Dell R660xs.

Procedure

Note:

All Avaya Solutions Platform R6.0.x 130 servers ship with 2 power supplies (redundant power).

1. If system does not have redundant power, shut down server according to Avaya application procedures. The system may already be down if power supply has failed to provide power to system board.
   - If server does not power down according to normal shutdown procedures, press and release the Power On/Standby button. This method initiates a controlled shutdown of applications and the OS before the server enters standby mode.
   - If the previous step did not work press and hold the Power On/Standby button for more than 4 seconds to force the server to enter standby mode. This method forces the server to enter standby mode without properly exiting applications and the OS. If an application stops responding, you can use this method to force a shutdown, but be aware that file corruption could occur using this method.
2. Disconnect the power cable from the power source and the power supply you intend to remove. Then remove the cables from the strap. If server has redundant power, the system should remain running on a single working supply.
3. Press the release latch and slide the power supply out of the chassis.
4. Verify that both the power supplies are the same type and have the same maximum output power. The maximum output power (shown in Watts) is listed on the power supply label.
5. Slide the new power supply into the chassis until the power supply is fully seated and the release latch snaps into place.
6. Connect the power cable to the power supply and plug the cable into a power outlet. If redundant, supplies will load share.
7. Power up the server (if powered down).

Chapter 8: R660xs Thermal Issues

Thermal issues

Symptoms

- Server powers up but quickly shuts down.
- LCD panel or Temperature Indicator indicates a temperature alarm or warning.
- Avaya application alarms or iDRAC alarms a temperature or fan problem.

For more information about temperature specifications, see Installing the Avaya Solutions Platform 130 Series R6.0.x guide.

Troubleshooting cooling problems

About this task

Use this procedure to troubleshoot cooling problems.

Before you begin

Ensure the following:

- System cover, air/cooling shroud, EMI filler panel, memory module blank, or back filler bracket is not removed.
- Ambient temperature is not higher than the system specific ambient temperature.
- External airflow is not obstructed.
- A cooling fan has not been removed.
- The expansion card installation guidelines have been followed.
- Each fan unit is comprised of 2 blades. If either blade fails the entire fan unit must be replaced.

Procedure

1. Verify ambient temperature is not exceeded and external air flow to the server is not obstructed.

   If the iDRAC web interface is available, check System Board Inlet Temp under System/Overview/Cooling/Temperatures.

2. Check the server LCD display and System Status LED indicators. For more information, see Status LED indicators on page 22.

   For a problem with a particular fan, the fan number is referenced by the LCD display, allowing you to identify and replace the proper fan by noting the fan numbers on the

cooling fan assembly. If you identify that a fan has failed, see Replacing cooling fans on page 43 or continue the following debugging steps.

3. Troubleshoot cooling fans using the following steps:
   a. Open the server lid and reseat the indicted fan or the fan's power cable. Fans are hot swappable if done one at a time. Be very careful to not touch the spinning blades of the fan. If the user feels more comfortable with the server powered off before removing and reseating fans, then power off the server by shutting down applications as documented and then shutting down the Operating System/Hypervisor.
   b. Restart the system to see if fan errors are cleared.

      Note:

      The fan number is referenced by the management software of the system. For a problem with a particular fan, you can identify and replace it by noting down the fan numbers on the cooling fan assembly.
4. If the problem persists, login to the iDRAC web interface and from the **System/Status** menu, view the fans and temperature status.
5. For additional information, view the Maintenance/System event logs. If the problematic fan is detected, replace it using the procedure Replacing cooling fans on page 43.
6. Perform the following steps for additional fan or thermal debugging:

   When feasible, reboot the server according to the Avaya application procedures.
   a. Connect a monitor, USB keyboard, and mouse to the Dell R660xs Server, and from the **Dell splash** screen, press `F10` to go to Lifecycle controller and run the diagnostics from the console.
   b. Click **Hardware Diagnostics** > **Run Diagnostics**, and navigate to the applicable tests for diagnosis.

      This begins the testing of a server. You can abort testing to select specific component testing by pressing `ESC`.
   c. Select fan testing and view results.
   d. If a fan is designated as failing or failed replace using the procedure Replacing cooling fans on page 43.

Replacing cooling fans

About this task

Use this procedure to replace cooling fans.

Before you begin

Warning:

Opening or removing the system cover when the system is on may expose you to a risk of electric shock. Exercise utmost care while removing or installing cooling fans if the system is still running.

The cooling fans are hot swappable but will depend on physical server access as the server lid must be removed while server is running and this may not be logistically possible. To maintain proper cooling and not to have the system automatically shutdown, replace only one fan at a time.

Note:

Even though fans are considered hot swappable, Avaya recommends shutting down the applications/server before replacing a fan.

For additional details, see Dell PowerEdge R660xs Installation and Service Manual.

Procedure

1. Remove the air/cooling shroud.
2. Remove the fan by holding the orange tab and lifting the cooling fan out of the fan cage.

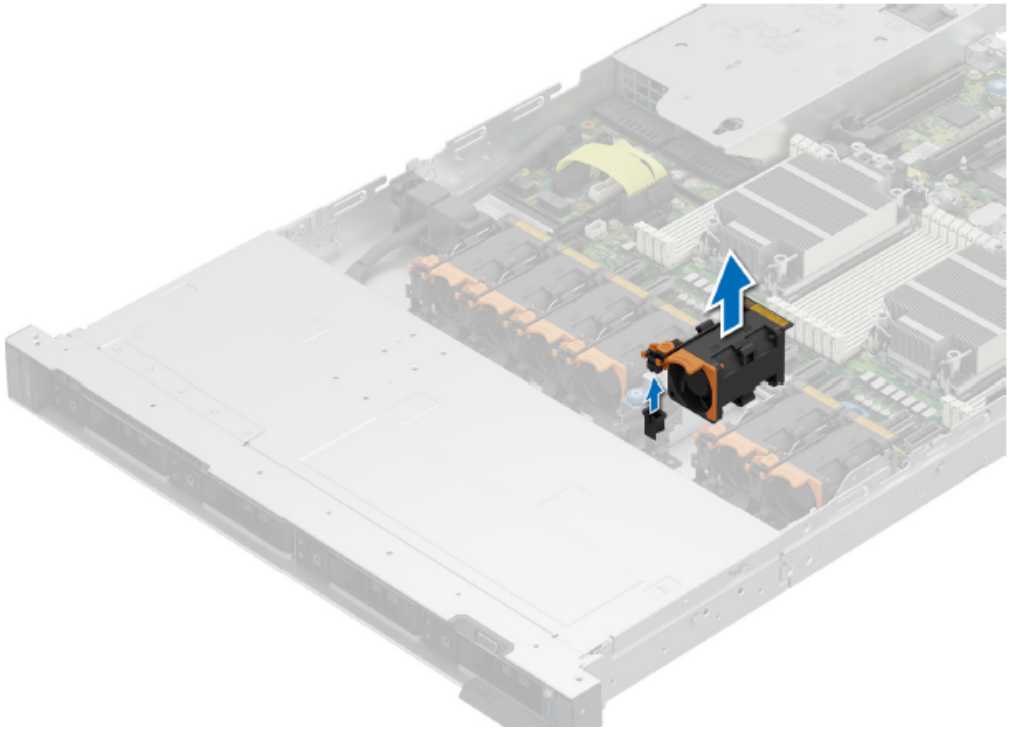


Figure 8: Removing fan

3. Install the cooling fan by lowering and inserting the cooling fan into the cage until it is seated firmly.

4. Install the air/cooling shroud.
5. Reinstall the system lid and review fan status.

Chapter 9: R660xs System Memory

Memory overview

Avaya systems ship with DDR5 registered DIMMs (RDIMMs).

System memory holds the instructions that are executed by the processor. Avaya Solutions Platform R660xs systems currently only support RDIMMs.

Memory bus operating frequency operates on 4400 MT/s or 5200MT/s.

Avaya server memory configurations

The following tables show sample memory configurations for one and two processor configurations that follow the appropriate memory guidelines stated in this section. These are the current Avaya server memory configurations. Refer to the underside of the server lid for DIMM locations.

Table 5: Sample memory configurations — single processor

System Capacity (in GB)	DIMM Size (in GB)	Number of DIMMs	Server Profile	DIMM Slot Population
64	16	4	A1 (single CPU)	A1, A2, A3, A4
128	16	8	A2 (dual CPU)	A1, A2, A3, A4 B1, B2, B3, B4
256	16	16	A3, A31 (dual CPU)	A1, A2, A3, A4, A5, A6, A7, A8, B1, B2, B3, B4, B5, B6, B7, B8

General memory module guidelines

Note:

If your system's memory configurations fail to observe these guidelines, your system might not boot, might stop responding during memory configuration, or might operate with reduced memory.

Avaya does not ship or support LRDIMMs.

This system supports Flexible Memory Configuration, enabling the system to be configured and run in any valid chipset architectural configuration. The following are the recommended guidelines for best performance:

- Populate memory module sockets only if a processor is installed.
- In a dual-processor configuration, the memory configuration for each processor should be identical. For example, if you populate socket A1 for processor 1, then populate socket B1 for processor 2, and so on.

For additional information, refer to Dell PowerEdge R660xs Installation and Service Manual.

Removing the air/cooling shroud to gain access for system memory replacement

Before you begin

Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet and peripherals. Shut down according to the Avaya application instructions.

About this task

The air/cooling shroud needs to be removed when servicing memory DIMMs.

Caution:

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

Procedure

1. Open the system.
2. Hold the touch points and lift the shroud away from the system.
3. Install/replace memory as necessary.

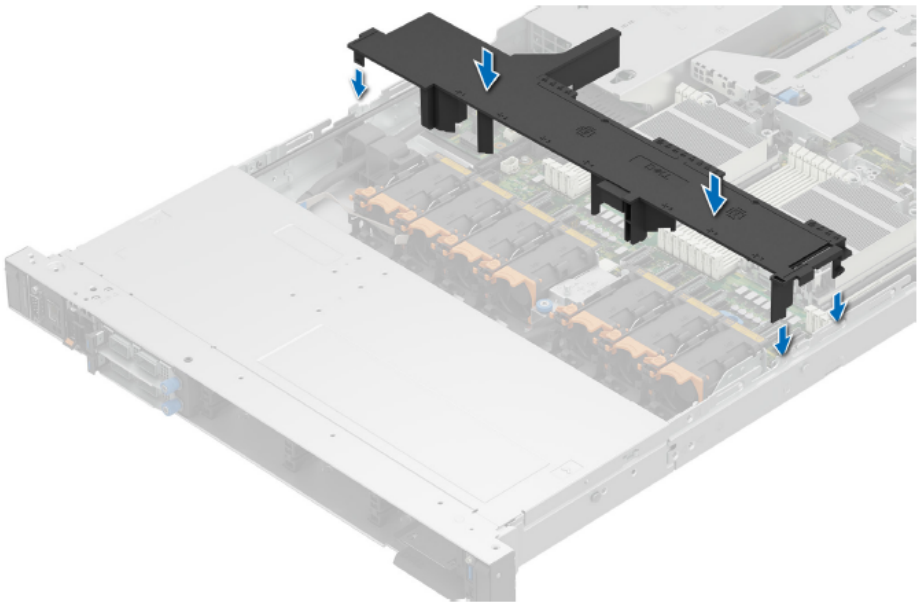


Figure 9: Air/cooling shroud

4. To install, align the tabs on the air/cooling shroud with the securing slots on the chassis and lower the air/cooling shroud into the chassis until it is firmly seated.
5. Close the system before reconnecting the disconnected peripherals and power.

DIMM problems

Symptoms

- General memory problems are occurring as indicated by Avaya alarming software. Error codes on LCD display error type that indicate memory error.
- Memory alert messages are sent from iDRAC via SNMP trap mechanism (when properly configured).
- Memory error messages are displayed on console on server boot up or attempted server boot up.
- Server is out of memory as reported by applications.
- Memory count error exists in iDRAC logs and/or System Event Log (SEL).
- The server fails to recognize existing memory and causes Avaya applications to fail or report memory errors in logs and alarms.
- Server fails to recognize new memory.

Replacing memory DIMMs

About this task

Follow the steps below and refer to Avaya server memory configurations on page 46 to replace a defective RDIMM.

Electrostatic alert:

ESD can damage electric circuits. Do not touch electric hardware unless you wear a grounding wrist strap or other static-dissipating device. For more information, see Electrostatic discharge safety on page 25.

Warning:

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

Procedure

1. Turn off the system according to Avaya application procedures, including any attached peripherals, and disconnect the system from the electrical outlet and peripherals.
2. Open the system.
3. Remove the air/cooling shroud.
4. Locate the appropriate memory module socket(s).
5. Press down and out on the ejectors on each end of the socket until the memory module or memory module blank pops out of the socket.

   Caution:

   Handle each memory module only on either card edge, making sure not to touch the middle of the memory module.
6. Install the memory module socket.
   a. Press the ejectors on the memory module socket down and out to allow the memory module to be inserted into the socket. If a memory module blank is installed in the socket, remove it.
   b. Align the memory module's edge connector with the alignment key of the memory module socket, and insert the memory module in the socket.

      The memory module socket has an alignment key that allows you to install the memory module in the socket in only one way.
   c. Push down the memory module on one side and then the other side of the DIMM until the socket levers latches into a locked position. When the memory module is properly seated in the socket, the levers on the memory module socket align with the levers on the other sockets that have memory modules installed.
7. Install the air/cooling shroud.

8. Close the system.
9. Reconnect the system to its electrical outlet and turn the system on, including any attached peripherals.
10. Watch system boot up screens for any error messages.
11. Check the system memory capacity.
12. On the console screen, press **F2** to go to the **System Setup** menu, and then use the arrow keys to select **Memory Settings**.
13. Press **Enter**.

    The system should reflect the newly installed memory.
14. Press **Esc** to exit.
15. If the memory size value is incorrect, one or more of the memory modules might not be installed properly, repeat step 4 through step 6.

Troubleshooting memory DIMMs

About this task

Follow the steps below to troubleshoot 16 GB RDIMMs.

Electrostatic alert:

ESD can damage electric circuits. Do not touch electric hardware unless you wear a grounding wrist strap or other static-dissipating device. For more information, see Electrostatic discharge safety on page 25.

Procedure

1. If the system is not operational, turn off the system, and unplug the system from the power source. Wait at least 60 seconds and then reconnect the system to power.
2. Power on the system with keyboard, mouse, and monitor. Note the messages on the console. If an error message is displayed indicating a fault with a specific memory module, go to step 10. Also view the LCD display for error messages. In case of error, replace the failed memory RDIMM.
3. If using the iDRAC interface, log in to the iDRAC web interface and view status from the **System/Memory** tab.
   a. Verify Individual Memory health. If bad memory is identified, replace RDIMM in designated socket.

      You can also use **Maintenance/System** tab to identify bad memory detected entries.
   b. If no errors are observed from iDRAC, proceed to running memory diagnostics described in steps below.

4. Turn off the system and disconnect the system from the electrical outlet.
5. Open the system.
6. Check the memory channels and ensure that they are populated correctly based on the tables above. Avaya only ships R660xs servers with 16 GB RDIMMS.
7. Ensure that DIMMs are fully seated.
8. Reinstall components and lid.
9. When feasible, power up the server according to Avaya's application procedures.
    a. From the Dell console, when the screen appears, press `F10` to go to the Lifecycle Controller and run the diagnostics from the console.
    b. On the Lifecycle Controller menu, select **Hardware Diagnostics** > **Run Diagnostics**.

       The testing of a server begins. You can abort the testing to select specific component testing by pressing `ESC`.
    c. Select memory testing and view results.
10. Based on diagnostics results identify the failing RDIMM.
11. Power down system with power button and remove power cords. Open server by removing server lid.
12. If a diagnostic test or error message indicates a specific memory module as faulty, swap or replace the module with a known good memory module. For more information, see Replacing memory DIMMs on page 49.
13. To troubleshoot an unspecified faulty memory module, replace the memory module in the first DIMM socket with a module of the same type and capacity. Remove all other DIMMs. Power up server and observe to see if memory error is reported. If no memory error is reported power down server and insert next DIMM in next appropriate slot designated on decal on inside of server lid. Continue procedure until bad DIMM is determined.
14. Reinstall components and lid.
15. As the system boots, observe any error message that is displayed and the diagnostic indicators on the front of the system.
16. If the memory problem is still indicated, repeat step 9 through step 15 for each memory module installed.

Next steps

If the part is defective, continue with the removal and replacement procedures.

Memory socket locations

The underside of the server lid contains a diagram showing the memory population.

Chapter 10: R660xs Network Interface Cards (NIC)

1 GbE Network Interface Cards (NIC)

Symptoms

- Network controller is installed but not working.
- Network controller has stopped working.

NIC Indicator Codes

The NIC Indicator has two LED indicators.

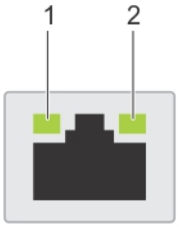


Figure 10: NIC LED indicators

1. Link indicator
2. Activity LED indicator

Table 6: Indicator codes

Status	Condition
Link and activity indicators are off	The NIC is not connected to the network.
Link indicator is green and activity indicator is blinking green	The NIC is connected to a valid network at its maximum port speed and data is being sent or received.
Link indicator is amber and activity indicator is blinking green	The NIC is connected to a valid network at less than its maximum port speed and data is being sent or received.
Link indicator is green and activity indicator is off	The NIC is connected to a valid network at its maximum port speed and data is not being sent or received.

Table continues…

Status	Condition
Link indicator is amber and activity indicator is off	The NIC is connected to a valid network at less than its maximum port speed and data is not being sent or received.
Link indicator is blinking green and activity is off	NIC identify is enabled through the NIC configuration utility.

10/25GbE Network Interface Card (NIC)

Note:

The R660xs must be at BIOS FW v2 or later and ASP at R6.0.0.4 or later.

Symptoms

- Network card is installed but is not functional.
- Network link(s) on this card are not stable or are out of service.

NIC indicator codes

The NIC has two LED indicators. Face plate text may vary.

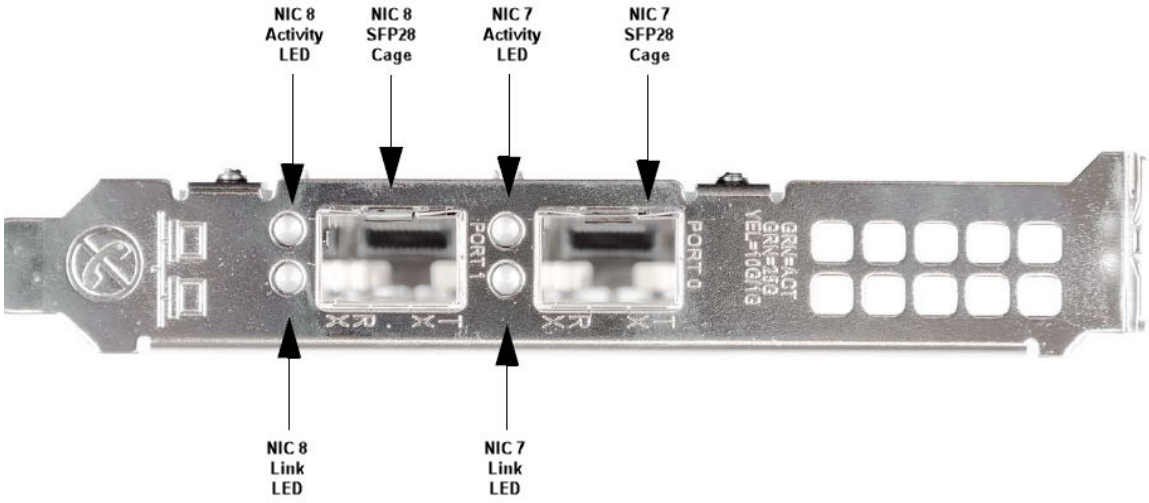


Figure 11: NIC LED indicators

1. Link indicator
2. Activity LED indicator

Table 7: 10/25GbE NIC Indicator codes

Status	Condition
Link and activity indicators are off.	The NIC is not connected to the network.
Link indicator is green and activity indicator is blinking green.	The NIC is connected to a valid network at its maximum port speed (25Gb) and data is being sent or received.
Link indicator is amber and activity indicator is blinking green.	The NIC is connected to a valid network at less than its maximum port speed (10Gb) and data is being sent or received.
Link indicator is green and activity indicator is off.	The NIC is connected to a valid network at its maximum port speed (25Gb) and data is not being sent or received.
Link indicator is amber and activity indicator is off.	The NIC is connected to a valid network at less than its maximum port speed (10Gb) and data is not being sent or received.
Link indicator is blinking green and activity is off.	NIC identify is enabled through the NIC configuration utility.

Troubleshooting a NIC

Procedure

1. View the server LCD display and System Status LED indicators for error indicators or messages.
2. Check the appropriate indicator on the NIC connector:
   a. If the link indicator does not light, check all cable connections.
   b. If the activity indicator does not light, the network driver files might be damaged or missing.
   c. Replace cable with known good network cable and view link status.
   d. Use another connector on the data switch.
   e. Check data switch configuration for proper administration.
3. If iDRAC interface is being utilized, log in to the iDRAC web interface and view status from the System/Network Devices.

   Verify NIC status is healthy and view individual NIC port state, statistics and configuration. Verify information is consistent with intended installation. That is, Enabled, Link status, Protocol, OS state, port statistics, and so on.
4. Ensure that the NIC is configured correctly in KVM on RHEL 8.10. Refer to Installing the Avaya Solutions Platform 130 Series R6.0.x.
5. Ensure that the Avaya Solutions Platform 130 server NICs and data switch ports are all set to the same data transmission speed and duplex.

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

   Note:

   - Customers must supply cables and/or transceivers compatible with their network infrastructure.
   - For 1GbE interface, always use 1000BaseT UTP (CAT5e) cables as a minimum or 1000BaseTX UTP (CAT6) cables.
   - For 10/25GbE interfaces the appropriate transceivers and cables are dependent on the customer network infrastructure. Proper cabling (fiber optic or Direct Attach Copper [DAC]) and compatible transceivers are required to operate the 10/25 GbE interfaces. These interfaces use the industry-standard Small Form-Factor Pluggable 28 (SFP28) form factor. Customers must select cables and transceivers that are supported and qualified by their respective network switch vendor. Refer to the switch vendor's documentation for the approved SFP28 cables and transceivers to ensure compatibility and correct operation.

7. Perform the following steps for additional debugging:

   Note:

   A keyboard and monitor is required to connect to the server console.

   a. When feasible, reboot the server according to Avaya's application instructions.
   b. From Dell console, press `F10` to go to **Lifecycle controller** menu and run the diagnostics from the console.
   c. Select **Hardware Diagnostic** > **Run Diagnostics**.

      This begins the testing of a server. You can abort the testing to select specific component by pressing `ESC`.

   d. Select network interface for testing and view results.

Next steps

If the part is defective, continue with the removal and replacement procedures.

Replacing the OCP 4x1GbE network card

About this task

Use this procedure to replace the OCP 4x1GbE network card.

Before you begin

Danger:

Opening or removing the system cover when the system is on may expose you to a risk of electric shock. It is required to shutdown the applications/server prior to replacing the OCP card. Remove server power cords before proceeding.

Procedure

1. Remove the server lid and locate the OCP card.
2. Open the blue latch to unlock the OCP card.
3. Push the OCP card towards the rear end of the system to disconnect from the connector on the system board.
4. Slide the OCP card out of the slot on the system.

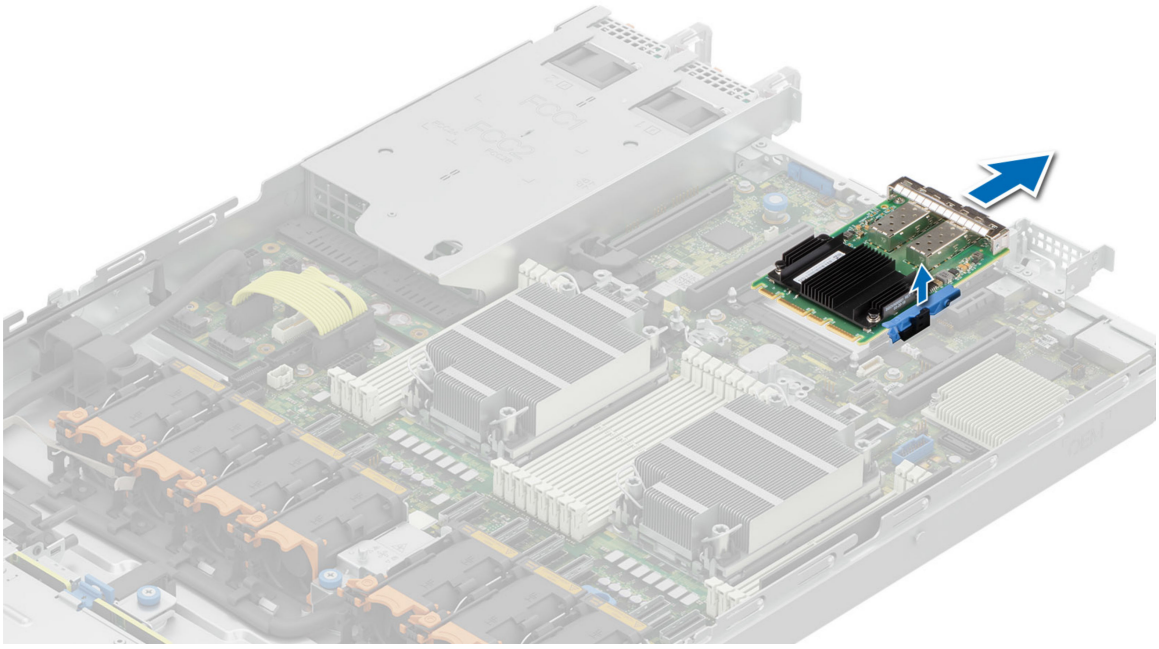


Figure 12: OCP card

5. Open the blue latch on the system board.
6. Slide the OCP card into the slot in the system.
7. Push until the OCP card is connected to the connector on the system board.
8. Close the latch to lock the OCP card to the system.

Replacing the 10/25GbE network card

About this task

Use this procedure to replace the 10/25GbE network card.

Before you begin

Danger:

Opening or removing the system cover when the system is on may expose you to a risk of electric shock. It is required to shutdown the applications/server prior to replacing the 10/25GbE network card. Remove server power cords before proceeding.

Procedure

1. Remove the server lid and locate RISER1 in the right, rear corner of the server.
2. Remove Riser1: grasp the blue touch points and lift the expansion card riser from the riser connector on the system board. 10/25GbE NIC card will be populated in the Riser1 card cage.

   Note:

   The figure below does not show the 10/25GbE populated in the riser.

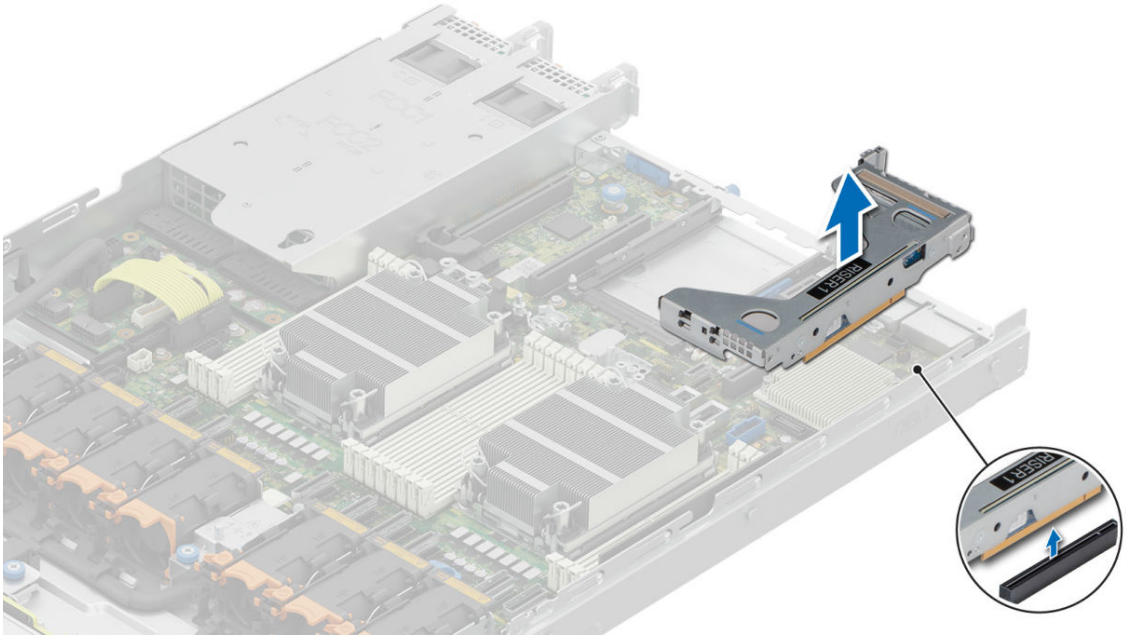


Figure 13: Riser1 removal

3. Pull and lift up the expansion card retention latch lock to open.

4. Hold the expansion card by its edges and pull the card until the card edge connector disengages from the expansion card connector on the riser. Set the removed 10/25GbE NIC card aside. Ensure suspect NIC card does not get reused.

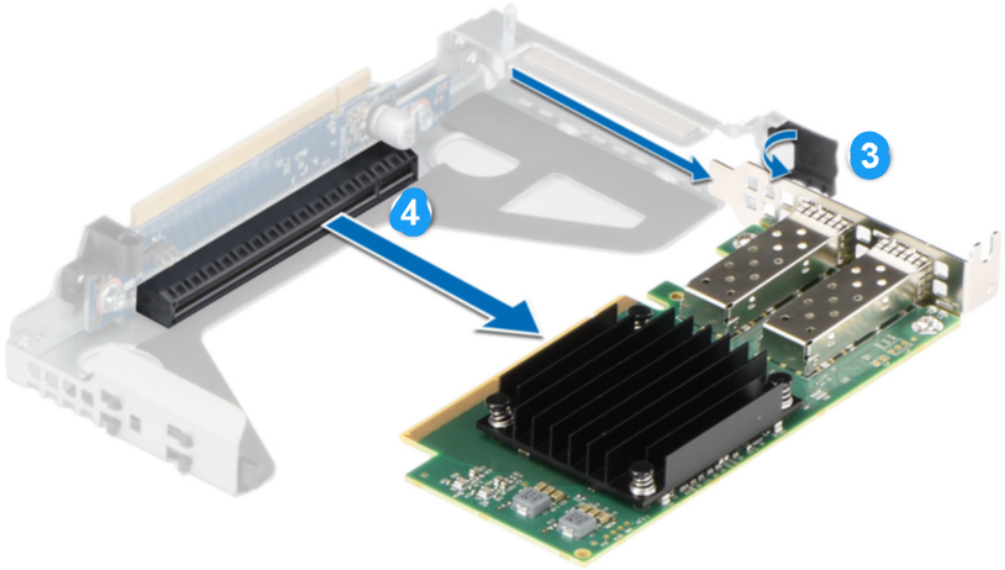


Figure 14: Removing the 10/25GbE NIC card from Riser1

5. Hold the replacement 10/25GbE NIC card by its edges, align the card edge connector with the expansion card connector on Riser1 and insert the NIC card edge connector firmly into the expansion card connector until the card is fully seated.
6. Close the expansion card retention latch.

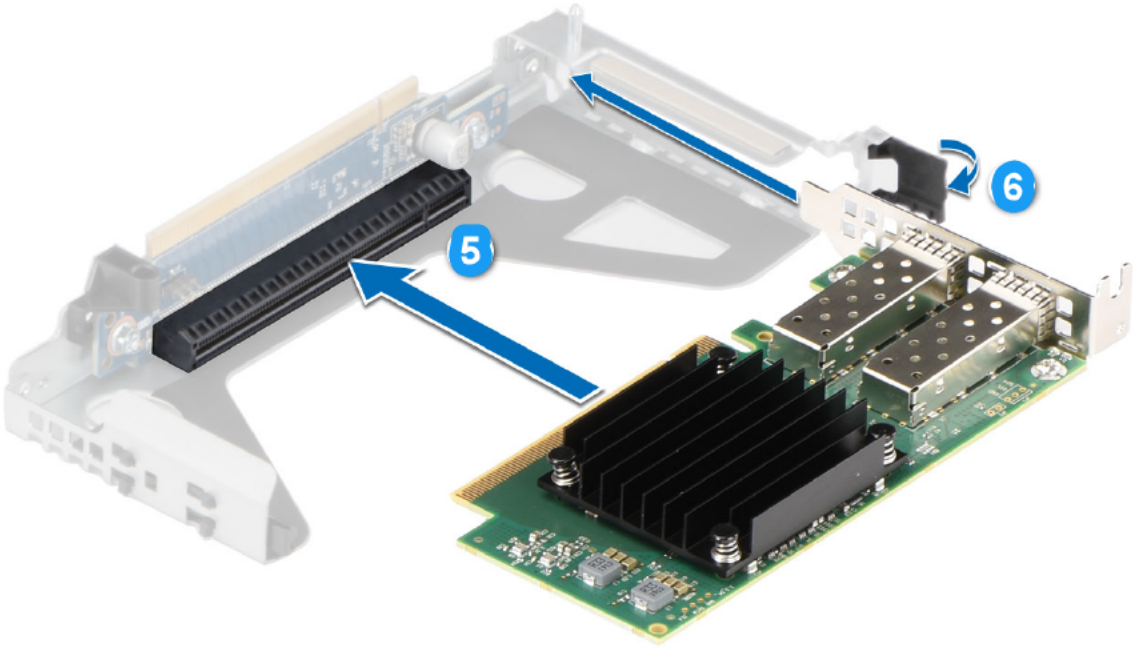


Figure 15: Inserting the 10/25GbE NIC card into Riser1

7. Holding the touch points, align the expansion card riser with the connector and the riser guide pins on the system board and chassis. Lower the expansion card riser into place until the expansion card riser connector is fully seated in the connector.

Note:

The figure below does not show the 10/25GbE populated in the riser.

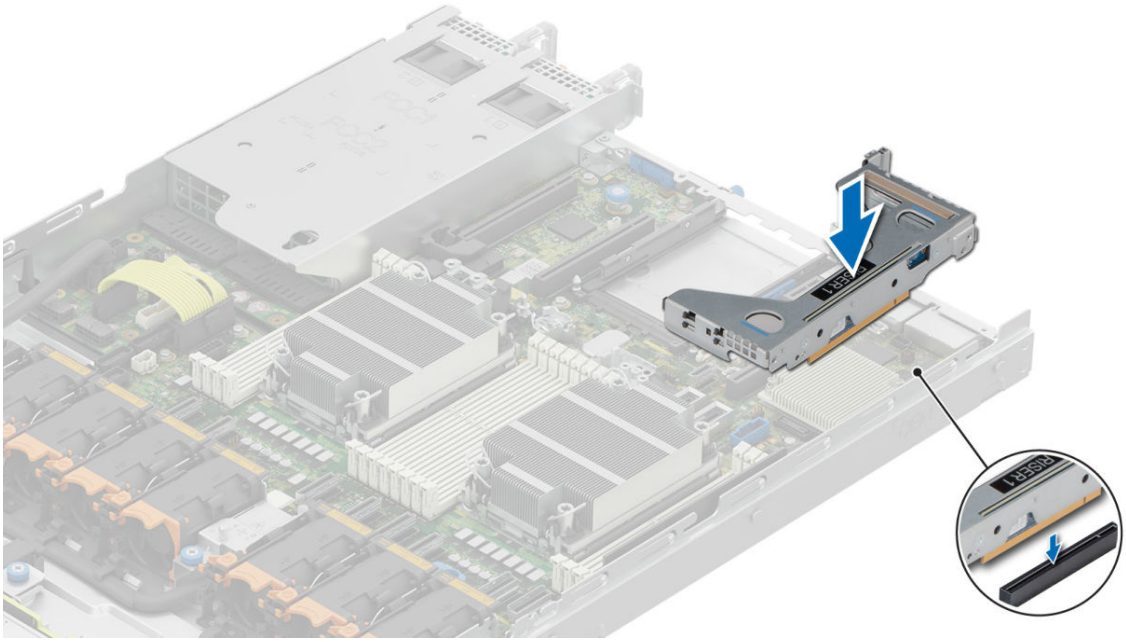


Figure 16: Riser1 installation

8. Once Riser1 connector is fully seated install the server lid.
9. Server can now be put back into service.
10. Reference the latest Avaya Certified Dell R660xs BIOS/Firmware Update PSN. As of January 2026, PSN027113u - Avaya Solutions Platform 100 Series Dell® R660xs Avaya Certified BIOS/Firmware Update, Version 2 should be used for updating server firmware.

    Important:

    It is MANDATORY to run the update to ensure the new 10/25 GbE NIC has the correct firmware.

Chapter 11: R660xs RAID Battery

With the introduction of the Dell R660xs, the RAID battery is no longer a separate orderable entity. In the event of a failure of the RAID battery, you need to order a replacement RAID card.

Note:

ASP R6.0.0.1 or later includes **perccli** command support to enable users to query RAID battery health. For more information, see Chapter 31: Dell R660xs and R640 perccli debugging on page 162.

Symptoms

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

Checking the RAID battery health using system setup menu

About this task

Use this procedure to check RAID battery health using the system setup menu.

Caution:

This procedure affects service so perform this step if suitable.

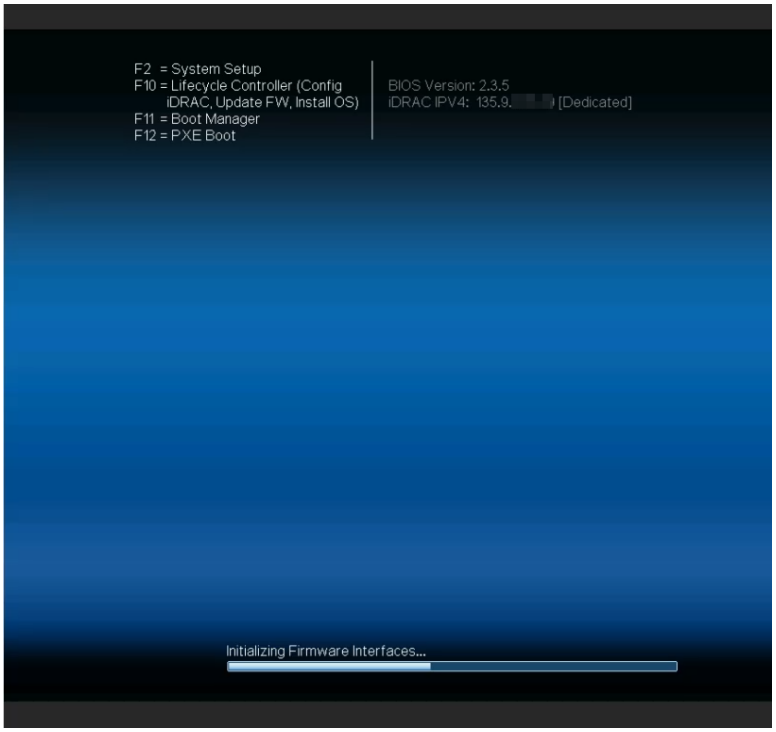
Note:

A keyboard and monitor is required to connect to the server console.

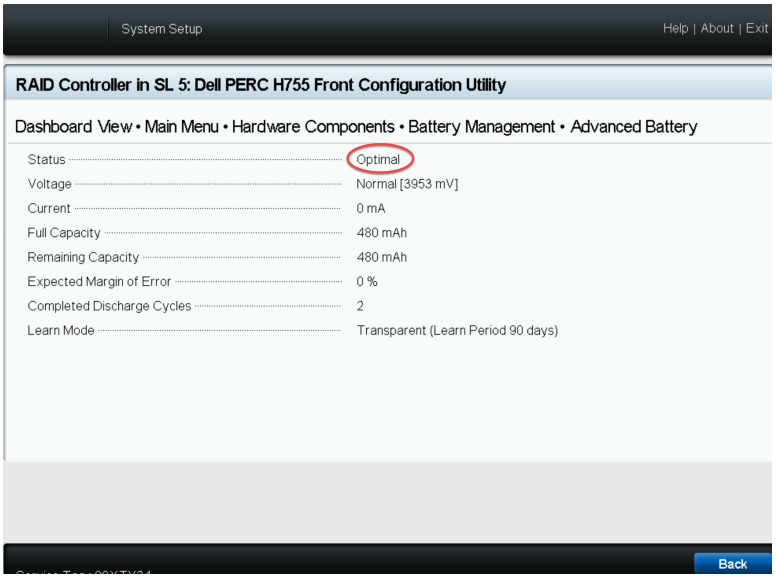
Procedure

1. Shut down or reboot application according to application documentation, if applicable.
2. When prompted on the Dell hardware boot screen, select `<F2> System Status`.
3. On the System Setup screen, in the System Setup Main Menu, select **Device Settings**.

4. On the Device Settings page, select **RAID Controller in Slot 1: Dell PERC H755 Adapter Configuration Utility** > **Main Menu** > **Hardware Components** > **Battery Management** > **Advanced Battery Management**.



5. Ensure that the status is optimal and battery has minimum 200 mAh remaining capacity. If the value is below 200 mAh, replace the battery as soon as possible. The RAID cache will go into write through mode at 135mAh. When this occurs server disk writes will be governed by disk drive speeds and will degrade system performance.



Checking the RAID battery health using the iDRAC

About this task

Use this procedure to check RAID battery health using the iDRAC menu. This procedure is valid for the Dell R660xs H755 RAID controller. This procedure indicates if a RAID battery is healthy or not. Detailed information about the actual charge values of the battery can be viewed using system set up procedures documented above.

Note:

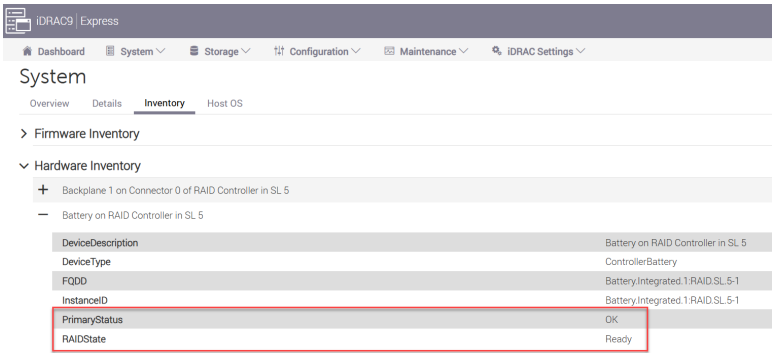
The latest version of iDRAC is iDRAC 9. All Dell R660xs implement iDRAC9.

Before you begin

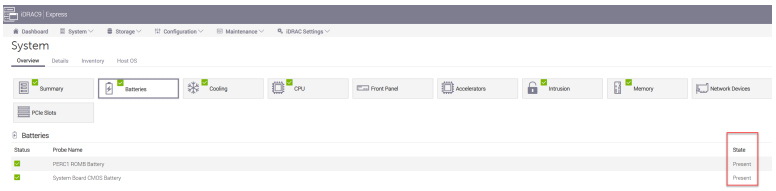
Ensure that you have the iDRAC login credentials.

Procedure

1. Log in to the iDRAC interface.
2. Navigate to **System** > **Inventory** > **Hardware Inventory**.
3. Click **Battery on RAID Controller in Slot 1**.



The health of the battery is displayed. You can also check the battery health from the **Overview** tab of the iDRAC interface. The green symbol indicates a healthy battery.



Checking the RAID battery health from Lifecycle Controller menu

About this task

Use this procedure to check RAID battery health from Lifecycle Controller menu. This procedure indicates if a RAID battery is healthy or not. Detailed information about the actual charge values of the battery can be performed using system set up procedures documented above.

Caution:

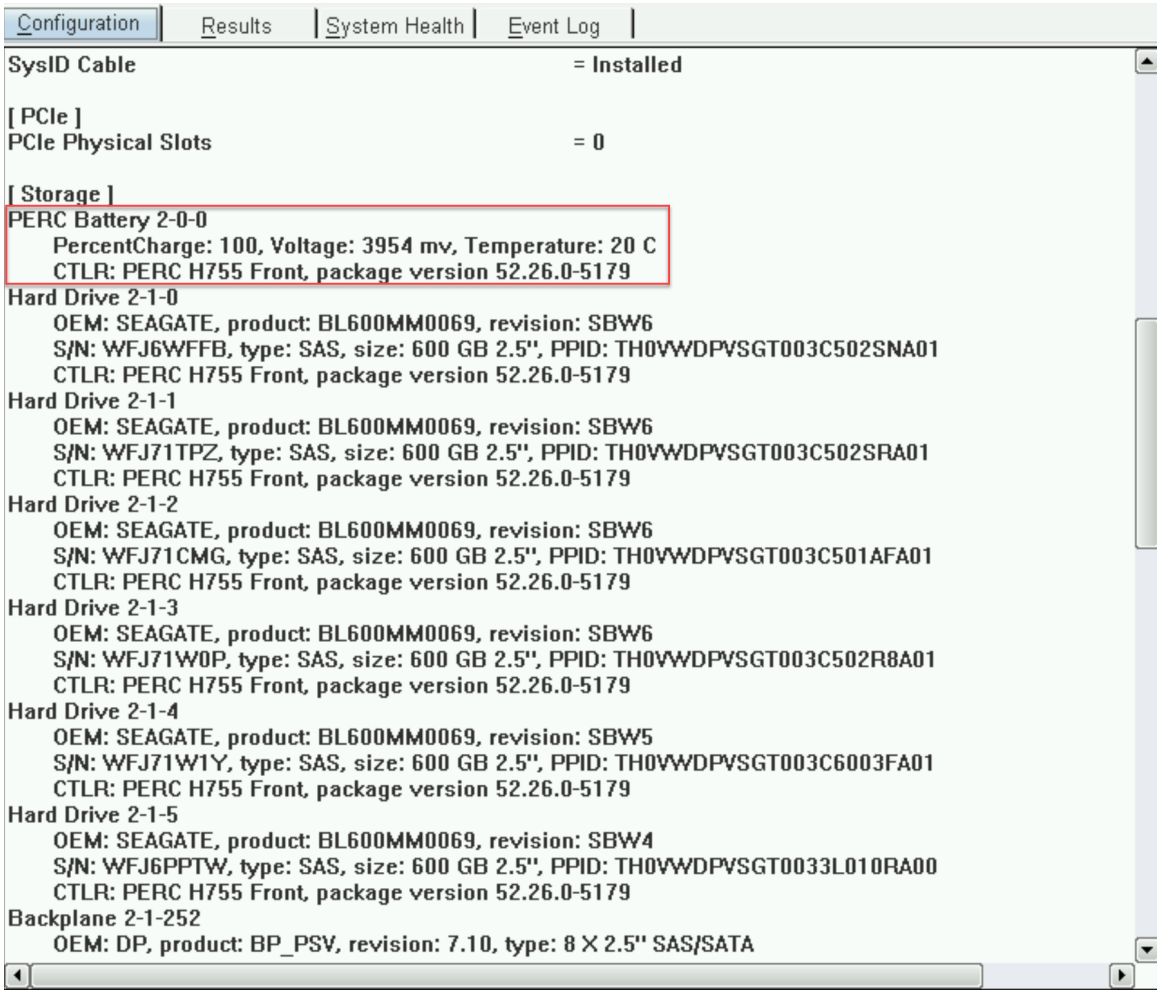
This procedure affects the service, so perform this step if suitable.

Procedure

1. Reboot the server according to Avaya application procedure.
2. Connect a monitor, USB keyboard, and mouse to the Dell R660xs server, and perform the following:
   a. From the Dell Splash screen, press `F10` to go to the Lifecycle Controller. If prompted, cancel the Setup wizard.
   b. On the Lifecycle Controller menu, click **Hardware Diagnostics** > **Run Hardware Diagnostics**.

      The testing of a server begins. You can abort the testing to select specific component testing by pressing `ESC` and then selecting **+**.
   c. On the **ePSA Pre-boot System Assessment** menu, in the **Configuration** tab, scroll down and select **PERC Battery** to see the percentage of battery charge.

      If the battery percentage gets equal to or below 30%, replace the battery.


Configuration
Results
System Health
Event Log
SysID Cable = Installed
[PCIe]
PCIe Physical Slots = 0
[Storage]
PERC Battery 2-0-0
PercentCharge: 100, Voltage: 3954 mv, Temperature: 20 C
CTLR: PERC H755 Front, package version 52.26.0-5179
Hard Drive 2-1-0
OEM: SEAGATE, product: BL600MM0069, revision: SBW6
S/N: WFJ6WFFB, type: SAS, size: 600 GB 2.5", PPID: TH0VWDPVSGT003C502SNA01
CTLR: PERC H755 Front, package version 52.26.0-5179
Hard Drive 2-1-1
OEM: SEAGATE, product: BL600MM0069, revision: SBW6
S/N: WFJ71TPZ, type: SAS, size: 600 GB 2.5", PPID: TH0VWDPVSGT003C502SRA01
CTLR: PERC H755 Front, package version 52.26.0-5179
Hard Drive 2-1-2
OEM: SEAGATE, product: BL600MM0069, revision: SBW6
S/N: WFJ71CMG, type: SAS, size: 600 GB 2.5", PPID: TH0VWDPVSGT003C501AFA01
CTLR: PERC H755 Front, package version 52.26.0-5179
Hard Drive 2-1-3
OEM: SEAGATE, product: BL600MM0069, revision: SBW6
S/N: WFJ71W0P, type: SAS, size: 600 GB 2.5", PPID: TH0VWDPVSGT003C502R8A01
CTLR: PERC H755 Front, package version 52.26.0-5179
Hard Drive 2-1-4
OEM: SEAGATE, product: BL600MM0069, revision: SBW5
S/N: WFJ71W1Y, type: SAS, size: 600 GB 2.5", PPID: TH0VWDPVSGT003C6003FA01
CTLR: PERC H755 Front, package version 52.26.0-5179
Hard Drive 2-1-5
OEM: SEAGATE, product: BL600MM0069, revision: SBW4
S/N: WFJ6PPTW, type: SAS, size: 600 GB 2.5", PPID: TH0VWDPVSGT0033L010RA00
CTLR: PERC H755 Front, package version 52.26.0-5179
Backplane 2-1-252
OEM: DP, product: BP_PSV, revision: 7.10, type: 8 X 2.5" SAS/SATA

Chapter 12: R660xs RAID Controller

RAID Controller (Dell PERC H755)

Note:

A RAID controller failure is rare. Perform troubleshooting of all other possible component failures before indicting the RAID controller.

Symptoms

The following may indicate RAID controller problems:

- Server status LED or drive LED indicator patterns indicate that drives are failing or failed. See Status LED indicators on page 22.
- Multiple or all drive failures are reported/alarmed.
- Virtual Drive and/or H755 is alarmed by iDRAC.
- PERC Card is not seen/reported by the system's device manager (See step 3 in iDRAC menu below, Troubleshooting the PERC H755 RAID Controller for details.)
- Data is inaccessible by virtual machines.
- Server response time is slow or frozen.
- System reports foreign drive or drives need to be imported yet no drives were inserted into the system.
- System reports missing drives, yet no drives were removed from the system.
- "No boot device available or Operating System detected" at system boot time.

Troubleshooting the PERC H755 RAID Controller

About this task

Use this procedure to troubleshoot PERC H755 RAID controller problems on the R660xs server. Virtual drive and hard disk drive (HDD) problems may occur if the RAID Controller is failing or has failed.

Caution:

This troubleshooting procedure can erase data stored on the virtual drive. Before proceeding, if possible, back up files from the virtual drive.

Procedure

Ensure that all drives are fully seated into their drive bay slots. If a drive is reinserted wait for it to rebuild (approximately 30 minutes) before reinserting another drive. Rebuild status can be verified from iDRAC Storage menus or RAID System set-up menus.

Note:

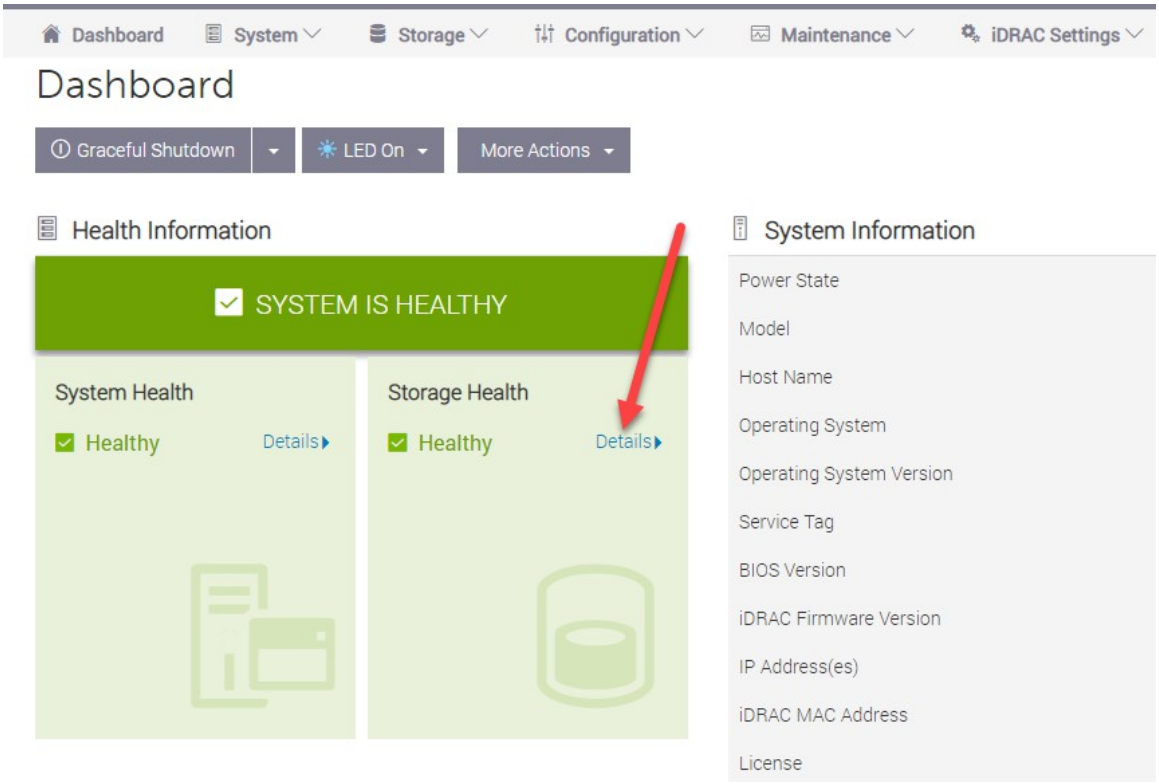
ASP R6.0.0.1 or later includes **`perccli`** debugging capabilities. For more information, see Chapter 31: Dell R660xs and R640 perccli debugging on page 162.

Using iDRAC9 for debugging

Procedure

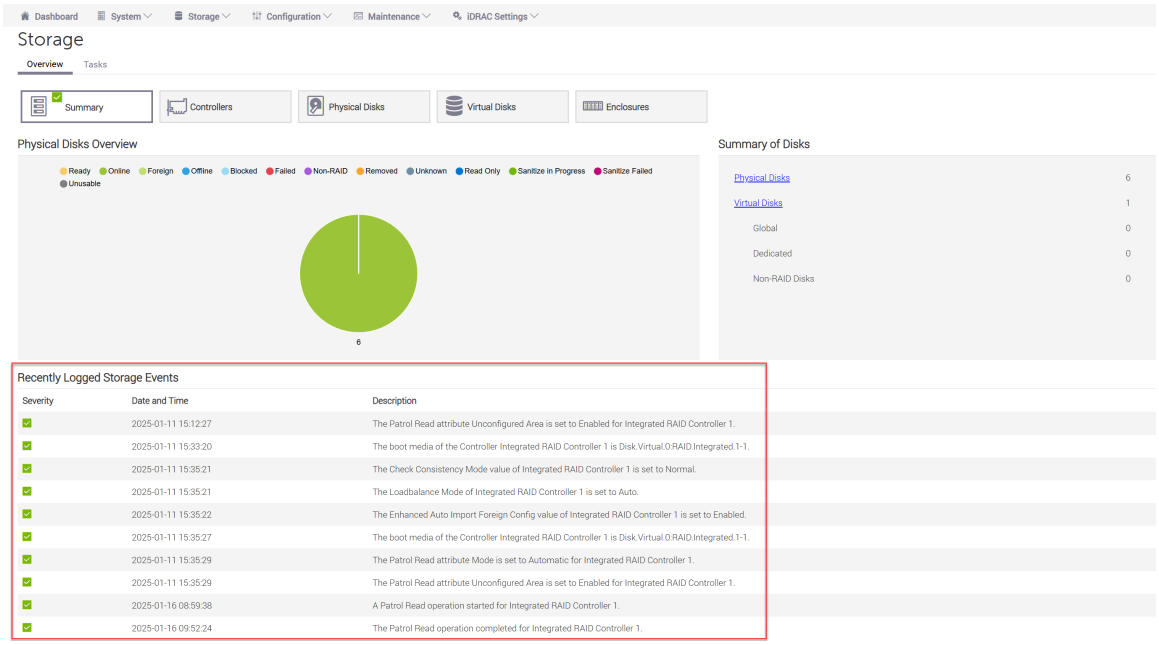
1. Connect to the iDRAC9 through the administered iDRAC network connection or the iDRAC9 direct connect interface on page 89 via micro USB.
2. Log into the iDRAC9 with credentials previously administered. If the iDRAC9 has not been administered, then only the iDRAC9 direct connect will be available; login will be `root` and the password will be located on the underneath side of the server pull out toe tag.
3. Once logged into the iDRAC, view the dashboard and its **Storage Health**. Select **Details**. If Storage Health Details are not available, then that is an indication that there could be RAID controller problems. Proceed to section Physical Assessment of RAID controller

components and System set-up menus on page 71 if the **Details** option is not available for selection.



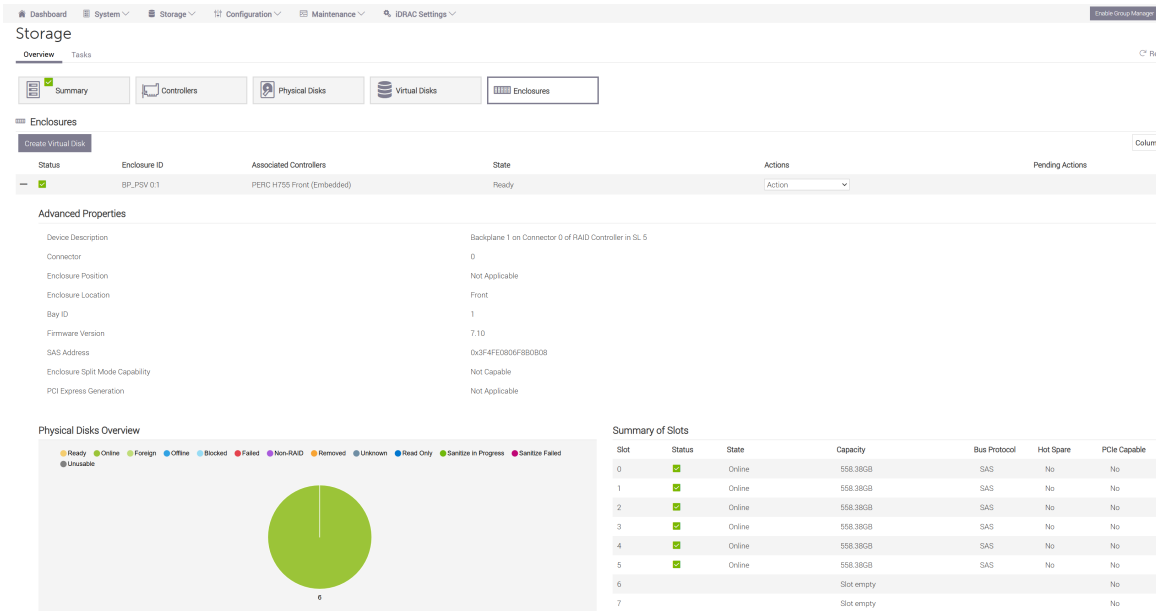
4. View the Logged Storage Events for any errors reported. Green check marks indicate healthy status. If no **Controllers** or **Enclosures** are displayed, then the H755 is not seen in the Device menus. This could indicate RAID controller problems. Proceed to section Physical Assessment of RAID controller components and System set-up menus on page 71 if no **Controllers** or **Enclosures** tab is available for selection. If the 5 **Overview**

tabs such as **Summary**, **Controllers**, **Physical Disks**, **Virtual Disks** and **Enclosures** are available on the **Storage** page, proceed to the next step.

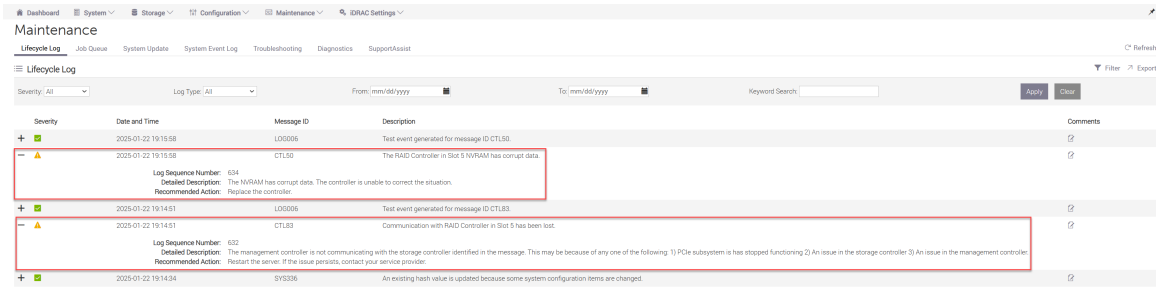


5. Select each tab across the top of this page reviewing information about the **Summary**, **Controller**, **Physical Disks**, **Virtual Disks** and **Enclosures**. If the H755 Controller is suspected, pay special attention to the **Controllers** and **Enclosures** tab information. Selecting the **+** symbol provides detailed information about a component. If the **Controller** and **Enclosures** tab show no errors, but there are errors reported under the **Physical Disks** or **Virtual Disks** then go to those appropriate sections of this document to repair a Physical Disk(s) (refer to the *Hard Disk Drive* chapter) or to create a new Virtual Disk (refer to the *RAID configuration* chapter in the Installing the Avaya Solutions Platform 130 Series R6.0.x guide). If errors are reported under the **Controller** or **Enclosures** tab address the

errors if enough information is provided. If errors are reported, but more debugging is required go to step *6*.



6. Go to the **Maintenance** > **Lifecycle Log** tabs for information about possible logged storage issues. Select the **+** next to the **Severity** symbol to get additional detail about an error. Below are examples of errors that may be reported about the RAID controller. If errors are reported follow the **Recommended Action**. If no errors are reported go to the *Dell Embedded System Diagnostics* chapter and run applicable Dell system diagnostics or move to section Physical Assessment of RAID controller components and System set-up menus on page 71 to verify PERC card installation and virtual/physical disk configuration. When in the **Diagnostics** menu, press escape to stop the initial start up tests and run the Advanced Options PCIe Bus, PERC Battery, Hard Drive and Backplane Tests. *The server will need to be shutdown according to application instructions and then restarted before entering diagnostics mode.*



Physical assessment of RAID controller components and system set-up menus

Procedure

1. Shutdown the server according to applications instructions.
2. After the server has completed its shutdown remove the power cords.
3. Open the server lid and locate the PERC H755 card module. Ensure the card is seated firmly and all cables are engaged and secured to their associated connectors. The Backplane designated in the figures below is the backplane used by the HDDs. If connections are suspected, reattach and join connectors. After connections are secured, place lid back on server.

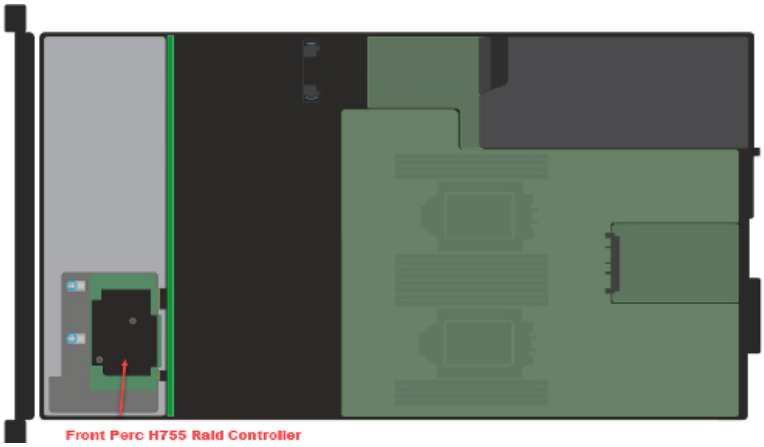
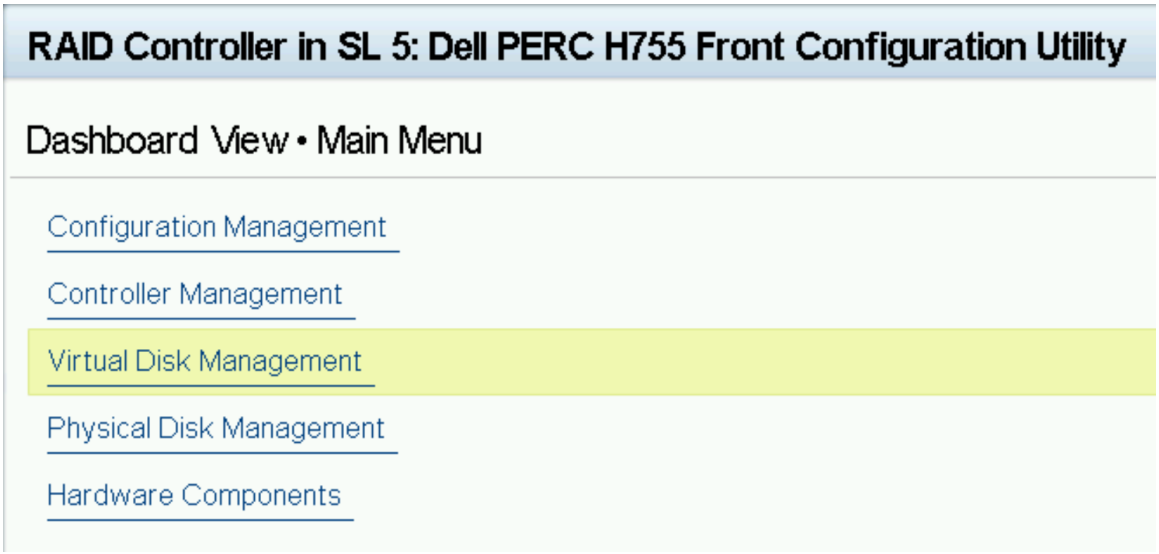
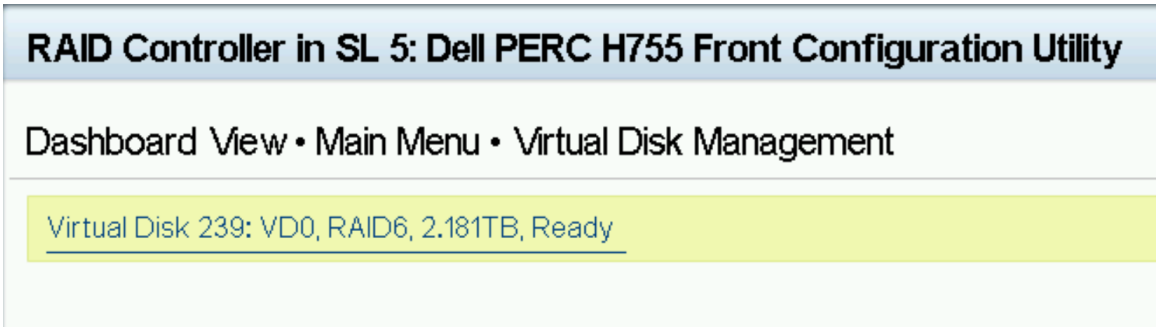


Figure 17: PERC H755 card location

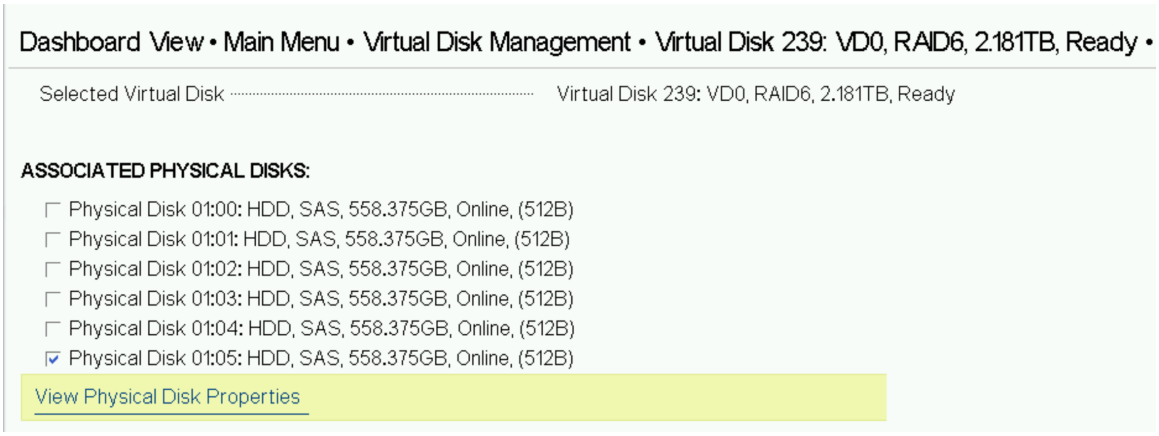
4. Install the power cords and power up the server.
5. Select **F2** when prompted to enter System Setup.
6. Select **Device Settings** > **RAID Controller in Slot 1: Dell PERC H755 Adaptor Configuration Utility** > **Main Menu** > **Configuration Management for the H755**. If there is no Dell PERC available for selection then the PERC card or its PCIe connection to the server motherboard is in an error condition. Go back to step 3 above and reseat the PERC card. If that does not correct the problem, the PERC card will need to be replaced. Refer to Replacing the PERC H755 RAID Controller in the next section.
7. Select **Virtual Disk Management** and view the Virtual Disk Status. Status should report as **Ready** if the virtual drive is functioning properly. See screens below. If the virtual disk was

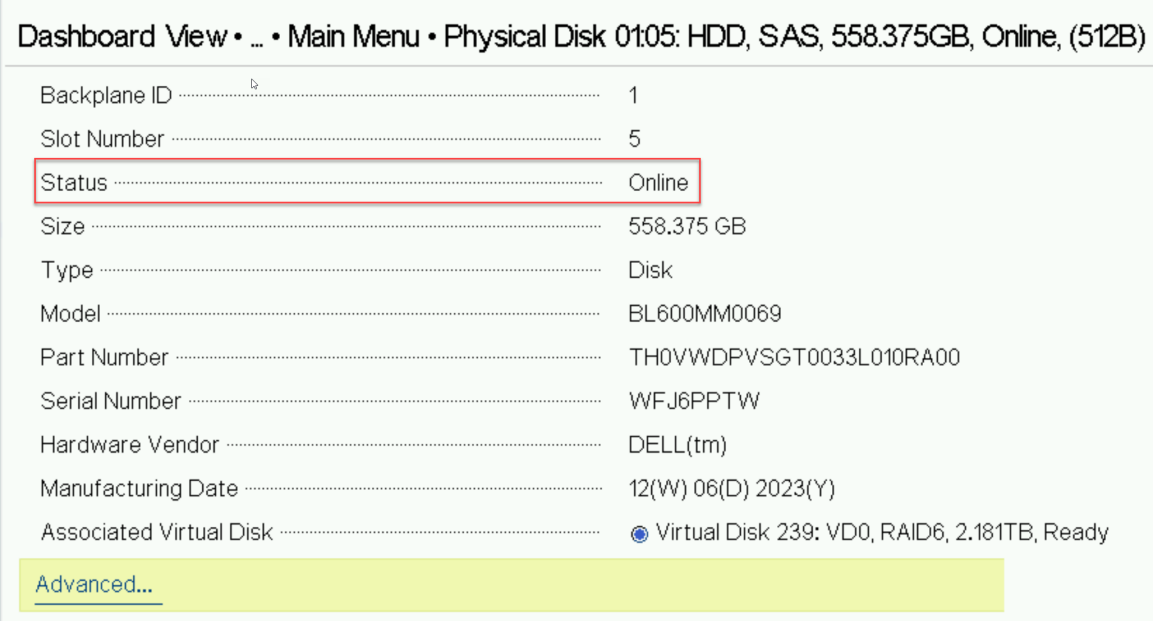
recently created, it is possible the virtual disk could report as Initializing which is normal. Ensure RAID configuration matches ASP 130 server profile.





8. Select each Associated Physical Disk that is part of the Virtual Disk and view its properties.





9. All disks should report as **Online** and should be associated with the Virtual Disk of the ASP 130 Server. If a physical disk is not online and/or errored go to the *Hard Disk Drive* chapter and replace the failing disk according to procedures. If more than 1 (RAID5) or 2 (RAID6) drives needed to be replaced, then a new virtual drive should be created. Go to the *RAID Configuration* chapter to create the virtual drive after all physical disks have been repaired and report online.

Note:

If all physical disks are healthy, but the virtual disk is in error go to the *RAID Configuration* chapter of the *Avaya Solutions Platform 130 Installation* document and try to create the virtual disk for this ASP 130. If the virtual drive can not be created then the H755 Card should be replaced. Go to *Replacing the PERC H755 RAID Controller* section of this document for replacement procedure.

If the PERC H755 virtual disk and physical drives all report as healthy and online other potential causes for poor server performance should be investigated. Running system diagnostics described in the *Dell Embedded System Diagnostics* chapter should be considered or reviewing additional information reported by the iDRAC is suggested.

Replacing the PERC H755 RAID Controller

About this task

Use this procedure to replace the PERC H755 RAID Controller.

Before you begin

Warning:

Opening or removing the system cover when the system is on may expose you to a risk of electric shock. It is required to shutdown the applications/server prior to replacing the PERC H755 RAID Controller.

Ensure that you locate the following components on the system motherboard: Reference the front PERC (front loading) portion of the label located on the inside of the server lid.

- PERC H755 Controller
- PERC H755 Controller cable connector (SAS Cables)

Warning:

Always practice safe electrostatic discharge procedures. For more information, see Electrostatic discharge safety on page 25.

Warning:

These steps are service impacting, conduct this activity during a customer approved maintenance window.

Procedure

1. Remove the drive backplane cover.
   a. Slide the backplane cover in the direction of the arrows marked on the backplane cover.
   b. Lift the backplane cover from the system.

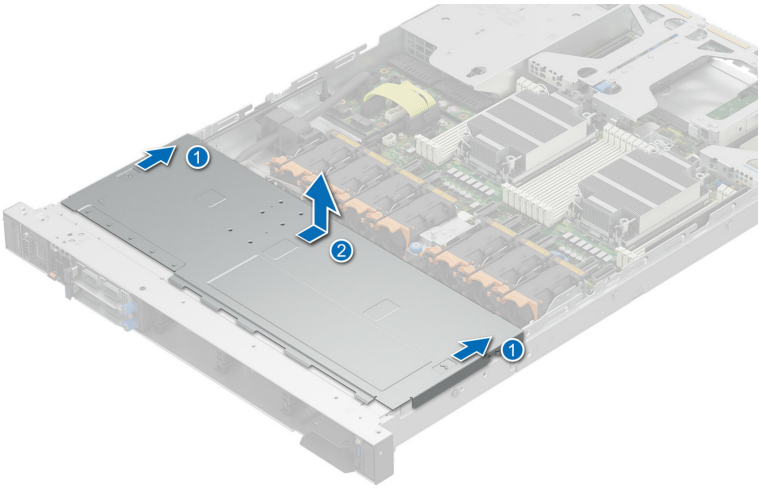


Figure 18: Backplane cover removal

2. Disconnect all the cables, observe the cable routing.
3. Using a Phillips 2 screwdriver, loosen the thumbscrews on the front PERC module.
4. Pull the front PERC module to disengage from the connector on the drive backplane.

5. Tilt and lift the front PERC module out of the system.

   Note:

   The numbers on the image below do not depict the exact steps. The numbers represent the sequence of removal.

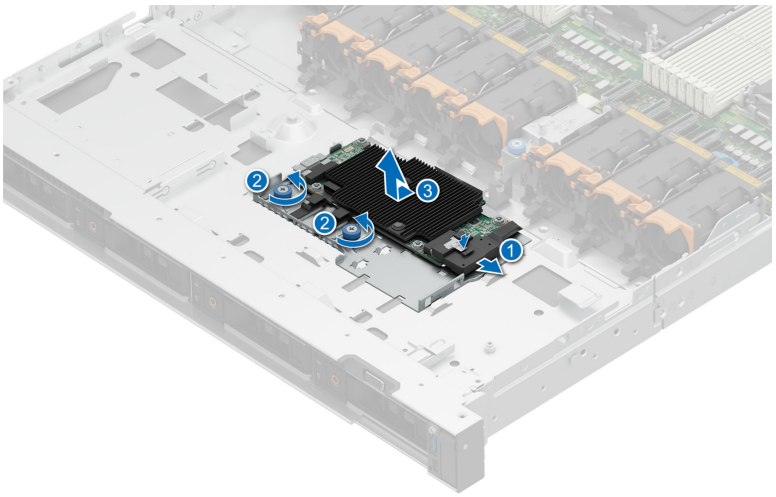


Figure 19: Removing PERC module

6. Connect the PERC cable to the front of the new PERC module.
7. Align the front PERC module at an angle until the tray touches the slot in the system.
8. Press the front PERC module connector with the connector on the drive backplane until firmly seated.
9. Using a Phillips 2 screwdriver, tighten the thumbscrews on the front PERC module.
10. Replace the drive backplane cover.
    a. Align the backplane cover with the guide slots on the system.
    b. Slide the backplane cover toward the front of the system until the backplane cover fits into place.

Chapter 13: R660xs Server FRU Replacement

This section describes how to replace a failed Avaya Solutions Platform (ASP) 130 Dell R660xs server in the field.

An ASP 130 server Field Replaceable Unit (FRU) comes with the system (BIOS) settings preconfigured for ASP 130 and base level firmware installed. Reference ASP 110 documentation for specific instructions on RAID configuration and BIOS/FW settings when replacing an ASP 110 server.

A server FRU is used for maintenance repair only. The Dell R660xs server FRU is a complete server replacement for Profiles A1, A2, A3 and contains all necessary components. Profile A31 has the same server FRU code as A3 but WILL require moving two HDDs from the failed A31 server FRU and require a reconfiguration of the RAID array to support the 8 HDD system.

This is different from the Dell R640 server FRU that only contains a subset of the components of the server it is replacing. Check the labels on the failed server to ensure the correct replacement server FRU is ordered.

Note:

For more information on importing drives from a failed server, see *Chapter 32: Dell R660xs and R640 RAID Import Procedures*.

Due to supplier constraints, the 600GB hard drive utilized in the ASP 130 R660xs server can no longer be sourced. Therefore, there are NEW R660xs Server FRU material codes. The original information is left for reference purposes only. With the introduction of 1.2 TB HDDs, there is now a unique A31 Server FRU available that comes populated with 8 HDDs.

BASE SERVER MATERIAL CODE (non-orderable)	BASE SERVER DESCRIPTION	SERVER FRU MATERIAL CODE	SERVER FRU DESCRIPTION
700520304 (600 GB HDDs)	ASP DELL R660XS BASE SRVR A1	700519841	ASP DELL R660 FRU SRVR A1
700520305 (600 GB HDDs)	ASP DELL R660XS BASE SRVR A2	700519842	ASP DELL R660 FRU SRVR A2
700520306 (600 GB HDDs)	ASP DELL R660XS BASE SRVR A3	700519843	ASP DELL R660 FRU SRVR A3

Table continues…

BASE SERVER MATERIAL CODE (non-orderable)	BASE SERVER DESCRIPTION	SERVER FRU MATERIAL CODE	SERVER FRU DESCRIPTION
700520434	ASP DELL R660XS 1.2TB BASE SRVR A1	700520437	ASP DELL R660 1.2TB FRU SRVR A1
700520435	ASP DELL R660XS 1.2TB BASE SRVR A2	700520438	ASP DELL R660 1.2TB FRU SRVR A2
700520436	ASP DELL R660XS 1.2TB BASE SRVR A3	700520439	ASP DELL R660 1.2TB FRU SRVR A3
700520444	ASP DELL R660XS 1.2TB BASE SRVR A31	700520445	ASP DELL R660 1.2TB FRU SRVR A31

Chapter 14: R660xs RAID Configuration

Reference the RAID Configuration section of the Installing the Avaya Solutions Platform 130 Series R6.0.x guide.

Chapter 15: R640 Front and Rear View

Front view of Dell™ PowerEdge™ R640 Server

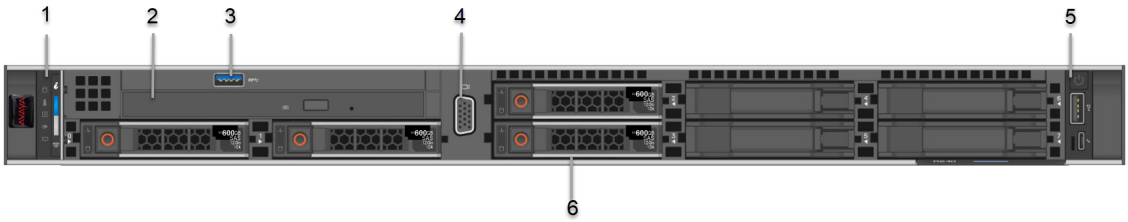


Figure 20: Front view of Dell PowerEdge R640 server

No.	Item	Icon	Description
1	Left control panel	NA	Displays the system health, system ID, and status LED indicators. • Status LED: Enables you to identify failed hardware components. There are up to five status LEDs and an overall system health LED (Chassis health and system ID) bar.
2	Optical drive	N/A	One slim SATA DVD-ROM drive. **Note:** DVD devices are data only.
3	USB port		The USB port is USB 3.0 compliant.
4	VGA port		Enables connection to the display device (console) of the system.
5	Right control panel	NA	Contains the power button, USB port, iDRAC Direct micro port, and the iDRAC Direct status LED.
6	Drive slots	NA	Enables installation of hard disk drives (HDDs) that are supported on your system.

Left control panel view

Figure 21: Left Control Panel View

Item	Button	Description
1	Status LED indicators	Indicate the status of the system.
2	System health and system ID indicator	Indicates the system health.
3	iDRAC Quick Sync 2 wireless indicator	Indicates if the iDRAC Quick Sync 2 wireless option is activated. The Quick Sync 2 feature allows management of the system using mobile devices. This feature aggregates hardware/firmware inventory and various system level diagnostic/error information that can be used in troubleshooting the system. **Note:** The iDRAC Quick Sync 2 wireless options *is not* available on Avaya Solutions Platform 130 servers.

Rear view of Dell™ PowerEdge™ R640 Server

Due to supply constraints the Avaya ASP 1XX Server will ship with an H750 RAID Controller Adapter in place of the H730P Mini RAID Controller, and also the 4x1GbE Intel NIC daughter card (NDC) will be replaced by a 4x1GbE Broadcom NIC daughter card. These changes occurred in 4QCY2022. The Broadcom 2x1GbE NIC card will now be installed in PCIe slot 2 to accommodate the H750 RAID Controller installed in PCIe Slot 1.

Original Configuration of Single CPU R640 server (H730P and Intel 4x1GbE NDC)

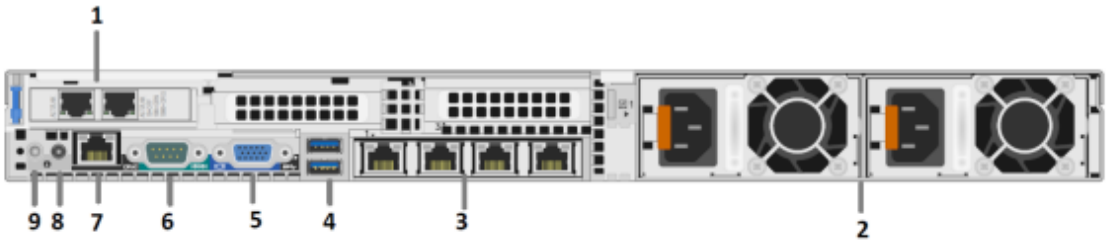


Figure 2: Back View of Dell PowerEdge R640 Single CPU Server with H730P Mini RAID Controller

New Configuration of Single CPU R640 server (H750 and Broadcom 4x1GbE NDC)

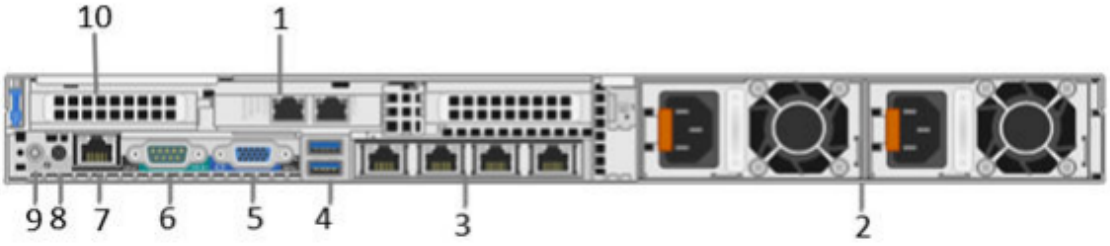


Figure 3: Back View of Dell PowerEdge R640 Single CPU Server with H750 RAID Controller Adapter

Original Configuration of Dual CPU R640 server (H730P and Intel 4x1GbE NDC)

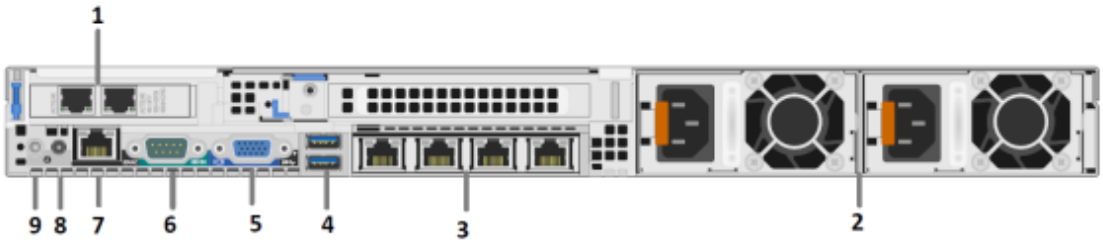


Figure 4: Back View of Dell PowerEdge R640 dual CPU Server with H730P Mini RAID Controller

New Configuration of Dual CPU R640 server (H750 and Broadcom 4x1GbE NDC)

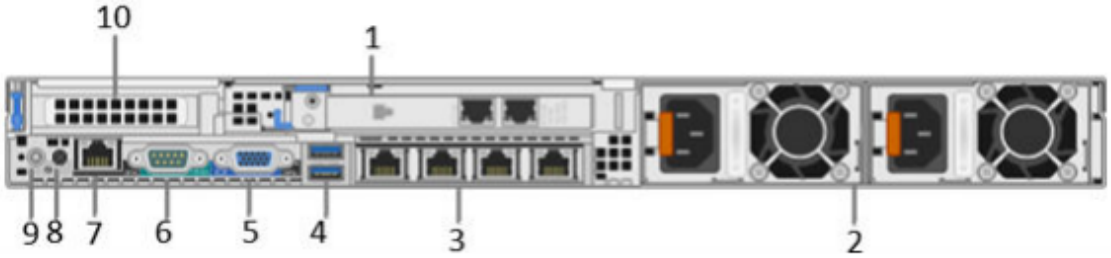


Figure 5: New Configuration of Dual CPU R640 server (H750 and Broadcom 4x1GbE NDC)

Table 8: Back View of Dell PowerEdge R640 Server

No.	Item	Icon	Description
1	PCIe expansion card slot(s)	N/A	Avaya Solutions Platform 1XX systems have a 2x1GbE Broadcom NIC installed in PCIe slot 1 in servers with an H730P Mini RAID controller. The 2x1GbE Broadcom NIC is installed in PCIe slot 2 in servers with an H750 RAID Controller Adapter installed in PCIe Slot 1. This NIC card in **Dual CPU** systems with the H750 RAID Controller has a full-height PCIe faceplate and **ports enslf0 and enslf1 are numbered left-to-right**. In **single CPU** configurations the 2x1GbE NIC, located in PCI slot2 has a half-height PCIe faceplate and **ports enslf0 and enslf1 are numbered right to left**. See figures above.
2	Power supply unit (2)	N/A	Power Supplies can accept voltages from 100-240VAC.
3	NIC port (4)		The NIC ports that are integrated on the network daughter card (NDC) provide network connectivity. (**eno1** – **eno4** – left to right viewing from rear of server {**eno1** = Mgmt_VM_Network and **eno2** = Services})
4	USB 3.0 port		The USB ports are of 9-pin and 3.0-compliant. These ports enable you to connect USB devices to the system.
5	VGA port		Enables you to connect a display device to the system.
6	Serial port		Enables you to connect a serial device to the system.
7	iDRAC9 dedicated port		Enables you to remotely access iDRAC.
8	CMA power port	N/A	The Cable Management Arm (CMA) power port enables you to connect to the CMA.
9	System identification button		The System Identification (ID) button is available on the front and back panel of the systems. Press the button to identify a system in a rack by turning on the system ID button. You can also use the system ID button to reset iDRAC and to access BIOS using the Step Through mode.
10	PERC H750 RAID Controller Adapter	N/A	The H750 is a RAID disk array controller made by Dell for its PowerEdge servers. This controller replaces the H730P Mini RAID controller shipped in earlier versions of the ASP 1XX. The H750 installs in PCIe slot 1 whereas the H730P is installed in an embedded PCIe slot on the server motherboard.

Front LCD panel

Use Front LCD panel to identify hardware status and problems with the server.

LCD panel provides system information, status, and error messages, to indicate if the system is operating correctly.

- The LCD backlight is white during normal operating condition

- When the system needs attention, the LCD backlight turns amber, and displays an error code followed by descriptive text.
- When the system turns off and there are no errors, LCD enters the standby mode after five minutes of inactivity. Press any button on the LCD to turn it on.
- If the LCD panel stops responding, remove the bezel and reinstall it.
- The LCD backlight remains turned off if LCD messaging is turned off using the iDRAC utility, the LCD panel, or other tools.

Note:

If the system is connected to a power source and an error is detected, the LCD turns amber regardless of whether the system is turned on or off.

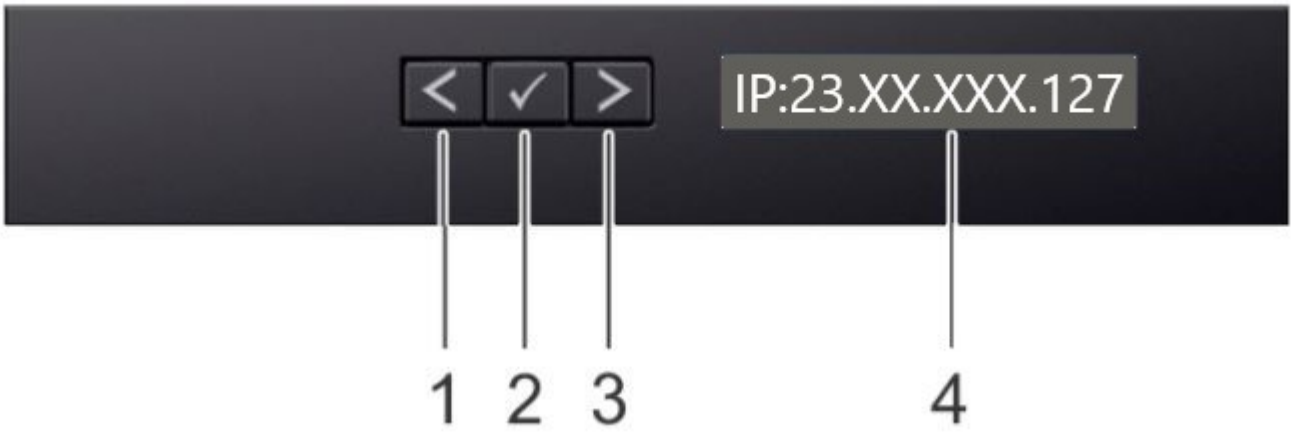


Figure 22: Front LCD panel

Item	Button	Description
1	Left	Move the cursor back in one-step increments
2	Select	Select the menu item highlighted by the cursor
3	Right	Move 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 • The display stops scrolling when the button is released. After 45 seconds of inactivity, the display starts scrolling.
4	LCD display	Displays system information, status, and error messages or iDRAC IP address. The name **Avaya** will appear in this field if there are no errors to display

LCD screen

The LCD screen is used to display hardware system errors and alarms. The LCD screen displays user-configurable information about the system. This screen is also displayed during normal system operation when there are no status messages or errors. 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, 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	iDRAC activation and administration is required at the customer site. Refer to *Avaya Solutions Platform 130 Series iDRAC9 Best Practices* for details or application-specific documentation. **Note:** For iDRAC support, refer to your application documentation.

Status LED indicators

Note:

The status LED indicators are always off and only turns on to a solid amber if any error occurs.

Icon	Button	Condition	Resolution
	Drive indicator	The indicator turns solid amber if there is a drive error.	• Check the System Event Log to determine if the drive has an error. • Run the appropriate online diagnostics test and restart the system and run embedded diagnostics (ePSA). • If the drives are configured in a RAID array, restart the system,

Table continues…

Icon	Button	Condition	Resolution
			and enter the host adapter configuration utility program.
	Temperature indicator	The indicator turns solid amber if the system experiences a thermal error (for example, the ambient temperature is out of range or there is a fan failure).	Ensure that none of the following conditions exist: • A cooling fan has been removed or has failed. • System cover, air/cooling shroud, memory module blank, or back filler bracket is removed. • Ambient temperature is too high. • External airflow is obstructed.
	Electrical indicator	The indicator turns solid amber if the system experiences an electrical error (for example, voltage out of range, or a failed power supply unit (PSU) or voltage regulator).	Check the System Event Log or system messages for the specific issue. If it is due to a problem with the PSU, check the status indicator on the PSU. Reseat the PSU.
	Memory indicator	The indicator turns solid amber if a memory error occurs.	Check the System Event Log or system messages for the location of the failed memory. Reseat the memory module.
	PCIe indicator	The indicator turns solid amber if a PCIe card experiences an error.	Restart the system. Update any required drivers from Avaya for the PCIe card. Reinstall the card.

Chapter 16: R640 Maintenance Replaceable Components

Electrostatic discharge safety

Electrostatic discharge (ESD) is the transfer of an electrostatic charge between objects at different electrical potentials. ESD can change the electrical characteristics and degrade or destroy a semiconductor device. ESD can also disrupt the normal operation of an electronic system by causing equipment malfunction or failure.

To dissipate or neutralize electrostatic charges, use proper grounding and conductive or dissipative materials.

Electrostatic alert:

ESD can damage electric circuits. Do not touch electric hardware unless you wear a grounding wrist strap or other static-dissipating device.

Proper antistatic packaging effectively shields products from electrostatic charges and reduces the charge generation caused by product movement within the container.

External maintenance field replacement units

Hard Disk Drive (HDD) Field Replaceable Units (FRUs) are hot-swappable.

FRU Part Number	Description	Hot-swappable?
700514178	R640 600 GB 10K SAS 2.5 INCH HDD	Y
700514176	R640 750 W Power Supply Unit	Y

Internal field replacement units

Internal Field Replaceable Units (FRUs) require the server to be shutdown and the cover removed to access and replace the FRU. All Virtual Machines running on the server should be gracefully shutdown prior to a graceful shutdown of the server itself.

FRU Part Number	Internal field replacement units	Hot-swappable?
700514180	R640 1GbE QUAD PT INTEL NIC DAUGR CRD	N
700514184	R640 H730P MINI RAID CNTRLR	N
700514181	R640 ADDN 1GbE PCIE DUAL PT NIC – Half Height Faceplate	N
700514183	R640 DVD-ROM DRIVE W/BRKT	N
700514177	R640 CHASSIS FAN	Y (will depend on physical server access as the server lid must be removed while server is running and may not be logistically possible.)
700514188	R640 16GB Memory DIMM	N
700514187	R640 8GB Memory DIMM	N
700514186	R640 H730P RAID battery	N
700516329	R640 1GbE QUAD PT BROADCOM NIC DAUGR CRD	N
700516330	R640 ADDN 1GbE PCIE DUAL PT NIC – Full Height Faceplate	N
700516327	R640 H750 RAID CNTRLR	N

Note:

Components must be replaced like-for-like. Do not interchange RAID controllers or QUAD PT NDCs when performing replacements.

Note:

Customers must check the base server comcode and verify which RAID controller is in their system. Processes for replacement of a RAID battery differ based on the RAID controller, H730 vs H750.

The H730 RAID battery is a consumable item and therefore is considered a customer replaceable unit (CRU). The RAID battery is not covered under the maintenance agreement. Customer is responsible for the Avaya Solutions Platform server RAID Battery replacement.

The H750 RAID battery is not a separate orderable entity. In the event of a failure of the RAID Battery, the RAID Card will need to be ordered for replacement.

RAID Battery or RAID Card can be ordered from the Avaya Catalogue. It is possible to place an order to have Avaya perform the replacement.

Server Field Replaceable Unit

A server Field Replaceable Unit is based on the server profile core components. A server FRU will have the appropriate number of CPU (1 or 2) and type of CPU (High or Low). The FRU server will have 1 DIMM per CPU and 6 embedded NIC ports. Accordingly, a single CPU machine will have 1 DIMM, and a dual CPU machine will have 2 DIMMs.

The FRU server will also contain one power supply and one HDD. The additional power supply and HDDs required to bring the server HW Profile to the correct configuration will come from the original server.

The following components must be sourced from the existing server:

- HDDs
- Power Supply Unit (PSU)
- PCIe Card (2x10GbE - for ASP 110 P5 ASBCE only)
- Additional DIMMs

Note:

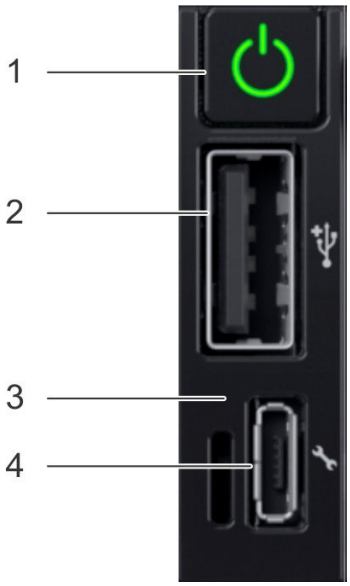
During the troubleshooting process, if any of the components sourced from the existing server fail, the appropriate parts must be ordered and replaced.

For more information, refer to the section Dell R640 FRU replacement on page 150.

Chapter 17: R640 iDRAC 9 Direct Connect

iDRAC 9 Direct Connect

The iDRAC 9 interface available on the Dell R640 can now be accessed using a micro USB 2.0 port located on the front right corner of the server. Diagnosing and troubleshooting the server can be improved by utilizing this port. The iDRAC 9 will be referenced in the following sections for troubleshooting components of the R640 server.



Item	Indicator button	Description
1	Power button	Indicates if system is turned on or off. Press the power button to manually turn on or off the system
2	USB Port	Select the menu item highlighted by the cursor
3	iDRAC Direct LED	The iDRAC Direct LED indicator lights up to indicate that the iDRAC Direct port is actively connected to a device

Table continues…

Item	Indicator button	Description
4	iDRAC Direct port	iDRAC Direct port is micro USB 2.0 compliant. This port enables access to the iDRAC Direct features

Direct Connect iDRAC9 Access Details:

Connect a micro-USB cable between the iDRAC micro-USB port located on the right front corner of the server to a USB type A port of a laptop (See figure below). Launch a web browser session from the connected laptop using IP address 169.254.0.3. The iDRAC GUI console will be displayed.

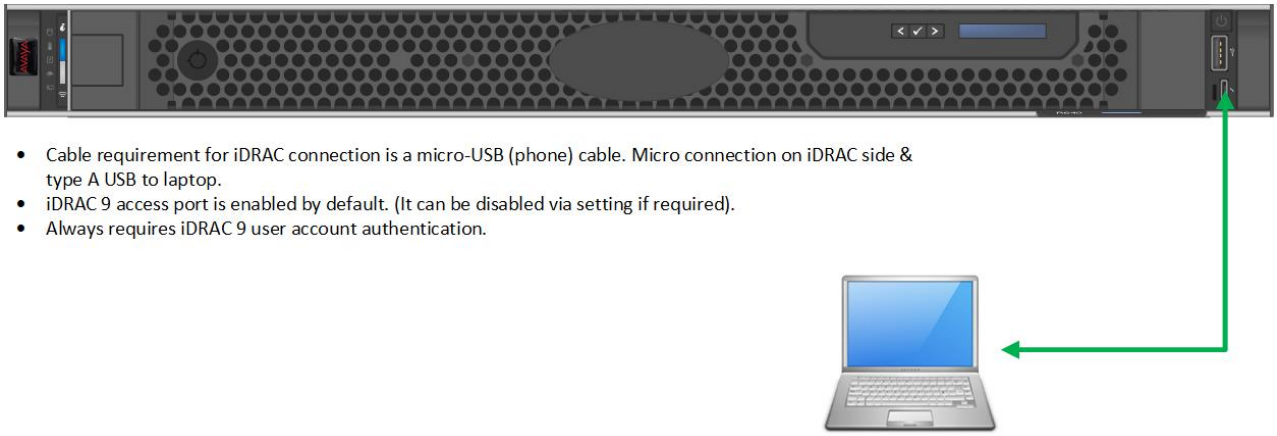


Figure 23: Front view of Dell R640

iDRAC login:

If the iDRAC interface has already been configured, then the username and password will need to be used for logging into the iDRAC interface. If the account has not been set up then the login details will be username=*root* and the password will be located on the pull-out toe tag next to the iDRAC micro usb port. Avaya Solutions Platform 130 servers ship with the iDRAC9 IPV4 service disabled for security purposes, but the local USB port is still accessible so only the password is required for logging into the iDRAC. Refer to the Avaya Solutions Platform 130 Series iDRAC9 Best Practices document or *Integrated Dell Remote Access Controller 9 User's Guide* available on the vendor's website for more information.

Chapter 18: R640 Hard Disk Drive

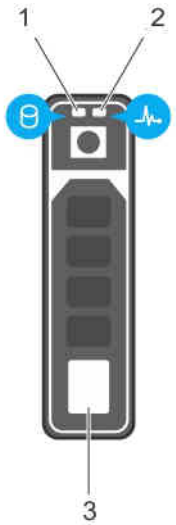
Symptoms

The following indicate hard drive problems:

- Server status LED or drive LED indicator patterns indicate that drives are failing or failed. See Status LED indicators on page 22.
- Drive failures are reported/alarmed by the iDRAC.
- Noisy hard drive.
- An Avaya application alarm indicates an active disk drive failure.
- An Avaya application does not process the drives.
- Data is inaccessible.
- Server response time is slower than usual.

Hard drive indicator patterns

Each hard drive carrier has an activity LED indicator and a status LED indicator. The indicators provide information about the current status of the hard drive. The activity LED indicator indicates whether the hard drive is currently in use or not. The status LED indicator indicates the power condition of the hard drive.



Indicator ID	Description
1	Hard drive activity indicator
2	Hard drive status LED indicator
3	Hard drive

HDD LED indicator patterns

Sr. No.	LED Pattern	Condition
1	Flashes green twice per second.	Identifying drive or preparing for removal.
2	Off	Drive ready for insertion or removal. **Note:** The drive status indicator remains off until all hard drives are initialized after the system is turned on. Drives are not ready for removal during this time.
3	Flashes green, amber, and then turns off.	Predicted drive failure.
4	Flashes amber four times per second.	Drive failed.
5	Flashes green slowly.	Drive rebuilding.
6	Steady green.	Drive online.
7	Flashes green for three seconds, amber for three seconds, and then turns off after six seconds.	Rebuild stopped.

Troubleshooting a hard disk drive

About this task

Use this procedure to troubleshoot hard disk drive (HDD) problems on the drive: R640 SRVR 600 GB 10K SAS 2.5 INCH HDD.

Caution:

This troubleshooting procedure can erase data stored on the hard drive. Before you proceed, back up files from the hard drives.

Note:

ASP R6.0.0.1 or later includes **`perccli`** command support to enable users to query RAID HDD health. Reference Chapter 31: Dell R660xs and R640 perccli debugging on page 162.

Procedure

1. Ensure that there are no loose connections and all drives are fully seated.

2. Check hard drive LED indicator patterns for indication of problems. For more information, see Status LED indicators on page 22 and Hard drive indicator patterns on page 30.
3. View LCD display for any HDD error messages.
4. Ensure drive blanks are installed properly when the server is operating otherwise drives may overheat and cause sluggish response or drive failure.
5. Ensure the replacement drives within an array are the same capacity size or larger.
6. Ensure the replacement drives within an array are the same drive type such as SAS, SATA or SSD. Currently, ASP servers only utilize SAS HDDs.
7. If you can access the iDRAC interface, log in to the iDRAC web interface and view the status from **Storage** tab:
    a. Check summary of disks and view virtual and physical disk status.
    b. Ensure virtual disk is online and reporting no errors.
    c. If error persists, replace failed or failing drive. See, Replacing a hard disk drive on page 94.
    d. If no errors are observed from iDRAC storage, observe logs reported on the iDRAC dashboard. If no errors are reported go to Maintenance/System Event logs. View logs for any HDDs events or errors reported.
    e. If no HDD errors can be detected go to step 9.
8. If you are not using iDRAC and running diagnostics is required, reboot the server according to Avaya application procedures:

    Warning:

    This step is service impacting, conduct this activity during a customer approved maintenance window.

    a. Connect a monitor, USB keyboard, and mouse to Dell R640 server.
    b. Reboot the server. From the Dell splash screen, press `F2` to go to **System Setup** > **iDRAC Settings** > **System Event Log**.
    c. View the event log for any errors pertaining to an HDD failure or HDD predictive failure. If HDD is identified as bad, replace the HDD as per Replacing a hard disk drive on page 94.
    d. If no failure can be isolated, back out of System Setup menu and reboot system, and go to next step.
9. If running diagnostic or further HDD debugging is required, reboot server according to Avaya application procedures:

Warning:

This step is service impacting, conduct this activity during a customer approved maintenance window.

a. Connect a monitor, USB keyboard, and mouse to Dell R640 server.

b. Reboot server. From the Dell splash screen, press `F10` to go to **Lifecycle Controller**, and cancel out of Setup Wizard if prompted.

c. Select **Hardware Diagnostics** > **Run Hardware Diagnostics**.

Testing of the server begins. You can abort the testing to select specific component testing by pressing `Esc`. Select `+` to run individual tests. Select help to see testing options.

d. Select appropriate HDDs to be tested by selecting Hard Drive Icons. You can select thorough testing if desired. The **Results** tab can be used to view pass or failure of a device.

e. If failed or failing HDD is detected, replace the HDD as per the Replacing a hard disk drive on page 94 procedure.

Replacing a hard disk drive

About this task

Use this procedure to replace the drive: R640 SRVR 600 GB 10K SAS 2.5 INCH HDD.

The following are some helpful guidelines for replacing a hard disk drive:

- Drives must be the same capacity to provide the greatest storage space efficiency when drives are grouped together into the same drive array. Larger drives can be used, but size will be limited to the smallest capacity drives.
- Drives in the same logical volume must be of the same type. Avaya does not support mixing SAS, SATA, and SSD drives in the same logical volume. Currently, the server employs SAS HDDs.
- Only use hard drives that have been tested and approved by Avaya for use with the hard-drive backplane.
- When installing a hard drive, ensure that the adjacent drives are fully installed. Inserting a hard-drive carrier and attempting to lock its handle next to a partially installed carrier can damage the partially installed carrier's shield spring and make it unusable.
- All hard drives connect to the system board through the hard-drive backplane. Hard drives are supplied in hot-swappable hard-drive carriers that fit in the hard-drive slots.
- When you install a hard drive, allow enough time for the array to rebuild. Be aware that high capacity hard drives can take a number of hours to rebuild.
- You can use the hard drive LED indicators to know the HDD rebuild status.

- You can use the iDRAC for viewing HDD status.

Caution:

- When a replacement hot-swappable hard drive is installed into the system, the hard drive automatically begins to rebuild. Ensure that the replacement hard drive is blank or contains data that can be over-written. Any data on the replacement hard drive is lost after the hard drive is installed.
- Do not turn off or reboot your system while the hard drive is being rebuilt. Rebooting the system can cause a hard drive failure.

Caution:

This troubleshooting procedure can erase data stored on the hard drive. Before you proceed, back up files from the hard drives.

Important:

Drives are hot-swappable, so power down of a server is not required or recommended. However, you must replace only one drive at a time allowing for full rebuild between replacement of drives.

For more information on importing drives from a failed server, see *Chapter 32: Dell R660xs and R640 RAID Import Procedures*.

If all HDDs are replaced at once, then a new virtual drive must be created and software reinstalled. For more information, see the *RAID Configuration* section of the Installing the Avaya Solutions Platform 130 Series R6.0.x guide.

Procedure

1. Remove failed or failing hard drive as indicated by HDD LEDs, application alarms, iDRAC, logs or diagnostics.

   A single hard drive can be removed and replaced from RAID 5 or RAID 6 (ASP 130). Other RAID configurations may exist on ASP 110 R6.0.x systems. The Avaya application will continue to run. The RAID controller will run in a degraded mode until a replacement HDD is installed and rebuilt.

   a. Remove the front bezel if applicable and locate the failed or failing HDD.

   b. Press the release button to open the drive carrier release handle.

   c. Holding the handle, slide the drive carrier out of the drive slot.

Figure 24: HDD removal

2. Install the replacement HDD using the following steps:
   a. Press the release button on the front of the drive carrier to open the release handle.
   b. Insert the drive carrier into the drive slot and slide until the drive connects with the backplane.
   c. Close the drive carrier release handle to lock the drive in place.

Figure 25: HDD insertion

   d. Drive should start to rebuild as indicated by appropriate LEDs.
   e. View RAID status from iDRAC interface or view hard drive LED indicator patterns to see drive rebuild status.

f. For more information, see Status LED indicators on page 22 and Hard drive indicator patterns on page 30.

Note:

The typical drive rebuild time is 30 minutes to 2 hours depending upon the size of HDD and the system load.

Chapter 19: R640 Power Supplies

Power supply problems

Problems

Refer to the following points to prevent basic power supply problems:

- Avoid loose connections. For example, loose power cables.
- Check the power supply handle LED and ensure it indicates that the power supply is working properly.
- Use only power supply units supplied by Avaya.
- After installing a power supply unit, allow some time for the system to recognize the power supply unit and determine if it is working properly.

AC PSU status indicator

AC power supply units (PSUs) have an illuminated translucent handle that serves as an indicator.

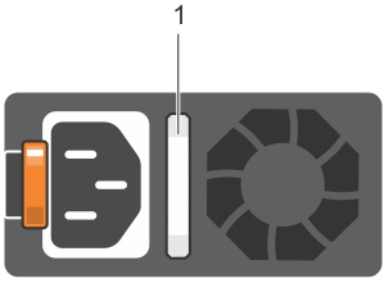


Figure 26: AC status indicator

Power Indicator Pattern	Condition
Green	A valid power source is connected to the PSU and the PSU is operational.
Blinking amber	Indicates a problem with the PSU.
Not illuminated	Power is not connected.

Table continues…

Power Indicator Pattern	Condition
Blinking green	When the firmware of the PSU is being updated, the PSU handle blinks green. **Caution:** Do not disconnect the power cord or unplug the PSU when updating firmware. If firmware update is interrupted, the PSUs do not function.
Blinking green and turns off	When hot-plugging a PSU, the PSU handle blinks green five times at a rate of 4 Hz and turns off. This indicates a PSU mismatch with respect to efficiency, feature set, health status, or supported voltage. **Caution:** • If two PSUs are installed, both the PSUs must have the same type of label. For example, Extended Power Performance (EPP) label. Mixing PSUs from previous generations of PowerEdge servers is not supported, even if the PSUs have the same power rating. This results in a PSU mismatch condition or failure to turn the system on. • When correcting a PSU mismatch, replace only the PSU with the blinking indicator. Swapping the PSU to make a matched pair can result in an error condition and unexpected system shutdown. To change from a high output configuration to a low output configuration or vice versa, you must turn off the system • Combining AC and DC PSUs is not supported and triggers a mismatch.

DC Power Supply

Important:

The DC power supply is not supported by Avaya.

Troubleshooting a power supply

Before you begin

Ensure that only trained service technician troubleshoot and perform the repairs.

You should only perform simple troubleshooting and minor repairs as authorized in this documentation, or as directed by Avaya services personnel. Damage due to servicing that is not authorized by Avaya is not covered by warranty or maintenance.

Procedure

Note:

Avaya strongly recommends that all servers are protected with an Uninterruptible Power Supply (UPS) for power surge and interruption protection.

1. To troubleshoot possible power source problems:
   a. If the system is off, press the power button to ensure that your system is turned on. If the power indicator does not glow when the power button is pressed, press the power button firmly.
   b. Ensure UPS is functioning properly.
   c. Plug another device into the power outlet to be sure the outlet is functional. Also, be sure the power source meets applicable standards.
   d. Replace the power cord with a known functional power cord to be sure it is not faulty.
   e. Ensure that no loose connections exist. For example, loose power cables.
   f. Have a qualified electrician check the line voltage to be sure it meets the required specifications.

   If power source is not the problem, continue with steps below to troubleshoot power supply unit.
2. Check LCD display, status LED indicators and power supply AC Status indicators for any power supply problems.
3. Reseat the failed power supply by removing and reinstalling it.
   - Step 3 assumes that you have a working second power supply.
   - After installing a power supply, allow several seconds for the system to recognize the power supply and to determine if it is working properly.
4. Ensure that no loose connections exist. For example, loose power cables.
5. If server is powered off, press the Power On/Standby button to be sure it is on. If the server has a Power On/Standby button that returns to its original position after being pressed, be sure you press the switch firmly. For more information consult the system power LED status.
6. Check the power supply AC status indicators, ensure they indicate that each power supply is working properly. If the status indicates a problem with a power supply (amber or off), then check the power source. If the AC power source is working properly, then replace the power supply.

   Note:

   Ensure that you use only Avaya approved power supply units with the Extended Power Performance (EPP) label on the back.
7. If iDRAC interface is utilized, log in to the iDRAC web interface, and click the **System/ Power Supplies** tab to view the power supply health.
   a. From the dashboard, check Recent Logs and System Event Logs.
   b. Check for any power supply entries indicating a problem.
   c. If you observe any failed power supply or power supply with error, replace failed or failing power supply. See Replacing a power supply on page 101.

d. If no errors are observed on the iDRAC dashboard and no power supply problems are detected, go to the step 10.

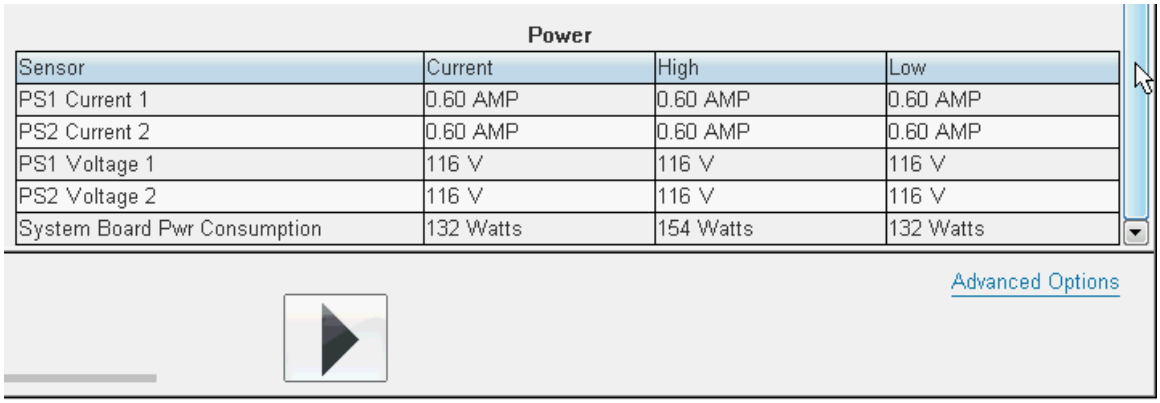
8. Perform the following steps for additional power supply debugging:

   a. Connect a monitor, USB keyboard, and mouse to Dell R640 Server, and from Dell splash screen, press `F10` to go to Lifecycle controller and run the diagnostics from the console.

   b. Select **Hardware Diagnostics** > **Run Diagnostics** and navigate to applicable diagnosis tests.

      This begins the testing of a server. You can abort the testing to select specific component by pressing `ESC`.

      No power supply tests can be run, but the **System Health** tab shows status of power supply 1 and power supply 2 as shown in the following illustration. The event log tab should also display any event involving the power supplies.



      For additional information, see *Dell EMC PowerEdge R640 Installation and Service Manual*.

Next steps

If the part is defective, continue with the removal and replacement procedures.

Replacing a power supply

About this task

Use this procedure to replace 750 W AC power supplies in Dell R640s.

Procedure

Note:

All Avaya Solutions Platform 130 servers ship with 2 power supplies (redundant power).

1. If system does not have redundant power, shut down server according to Avaya application procedures. The system may already be down if power supply has failed to provide power to system board.
   - If server does not power down according to normal shutdown procedures, press and release the Power On/Standby button. This method initiates a controlled shutdown of applications and the OS before the server enters standby mode.
   - If the previous step did not work press and hold the Power On/Standby button for more than 4 seconds to force the server to enter standby mode. This method forces the server to enter standby mode without properly exiting applications and the OS. If an application stops responding, you can use this method to force a shutdown, but be aware that file corruption could occur using this method.
2. Disconnect the power cable from the power source and the power supply you intend to remove. Then remove the cables from the strap. If server has redundant power, the system should remain running on a single working supply.
3. Press the release latch and slide the power supply out of the chassis.
4. Verify that both the power supplies are the same type and have the same maximum output power. The maximum output power (shown in Watts) is listed on the power supply label.
5. Slide the new power supply into the chassis until the power supply is fully seated and the release latch snaps into place.
6. Connect the power cable to the power supply and plug the cable into a power outlet. If redundant, supplies will load share.
7. Power up the server (if powered down).

Chapter 20: R640 Thermal Issues

Thermal issues

Symptoms

- Server powers up but quickly shuts down.
- LCD panel or Temperature Indicator indicates a temperature alarm or warning.
- Avaya application alarms or iDRAC alarms a temperature or fan problem.

For more information about temperature specifications, see Installing the Avaya Solutions Platform 130 Series R6.0.x.

Troubleshooting cooling problems

About this task

Use this procedure to troubleshoot cooling problems.

Before you begin

Ensure the following:

- System cover, air/cooling shroud, EMI filler panel, memory module blank, or back filler bracket is not removed.
- Ambient temperature is not higher than the system specific ambient temperature.
- External airflow is not obstructed.
- A cooling fan has not been removed.
- The expansion card installation guidelines have been followed.
- Each fan unit is comprised of 2 blades indicated by A/B, e.g, Fan1A/Fan1B.

Procedure

1. Verify ambient temperature is not exceeded and external air flow to the server is not obstructed.

   If the iDRAC web interface is available, check System Board Inlet Temp under System/Overview/Cooling/Temperatures.

2. Check the server LCD display and System Status LED indicators. For more information, see Status LED indicators on page 22.

   For a problem with a particular fan, the fan number is referenced by the LCD display, allowing you to identify and replace the proper fan by noting the fan numbers on the

cooling fan assembly. If you identify that a fan has failed, see Replacing cooling fans on page 104 or continue the following debugging steps.

3. Troubleshoot cooling fans using the following steps:
   a. Open the server lid and reseat the indicted fan or the fan's power cable. Fans are hot swappable if done one at a time. Be very careful to not touch the spinning blades of the fan. If the user feels more comfortable with the server powered off before removing and reseating fans, then power off the server by shutting down applications as documented and then shutting down the Operating System/Hypervisor.
   b. Restart the system to see if fan errors are cleared.

      Note:

      The fan number is referenced by the management software of the system. For a problem with a particular fan, you can identify and replace it by noting down the fan numbers on the cooling fan assembly.
4. If the problem persists, login to the iDRAC web interface and from the **System/Status** menu, view the fans and temperature status.
5. For additional information, view the Maintenance/System event logs. If the problematic fan is detected, replace it using the procedure Replacing cooling fans on page 104.
6. Perform the following steps for additional fan or thermal debugging:

   When feasible, reboot the server according to the Avaya application procedures.
   a. Connect a monitor, USB keyboard, and mouse to the Dell R640 Server, and from the **Dell splash** screen, press `F10` to go to Lifecycle controller and run the diagnostics from the console.
   b. Click **Hardware Diagnostics** > **Run Diagnostics**, and navigate to the applicable tests for diagnosis.

      This begins the testing of a server. You can abort testing to select specific component testing by pressing `ESC`.
   c. Select fan testing and view results.
   d. If a fan is designated as failing or failed replace using the procedure Replacing cooling fans on page 104.

Replacing cooling fans

About this task

Use this procedure to replace cooling fans.

Before you begin

Warning:

Opening or removing the system cover when the system is on may expose you to a risk of electric shock. Exercise utmost care while removing or installing cooling fans if the system is still running.

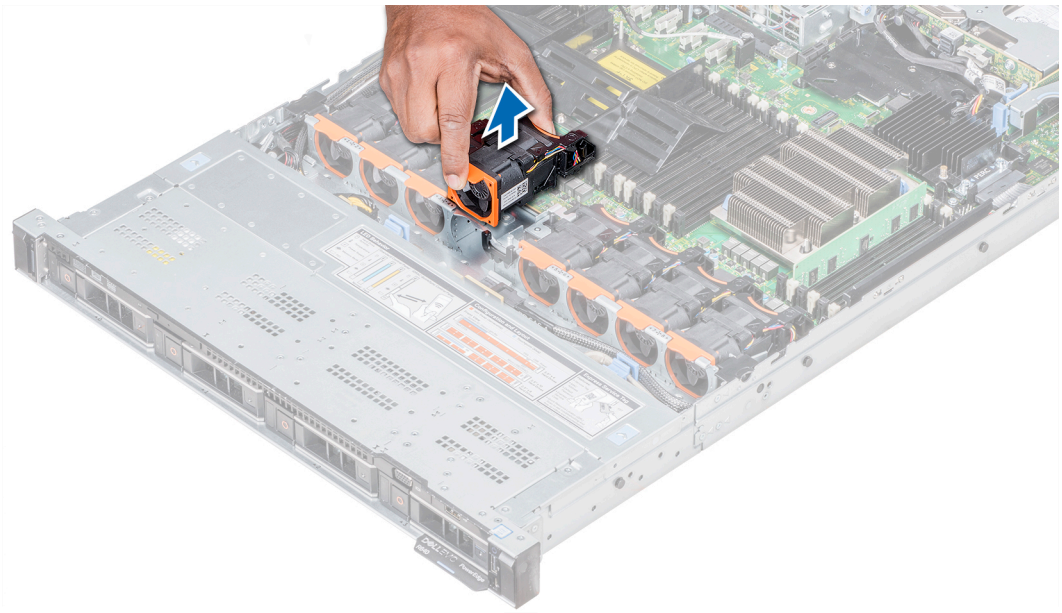
The cooling fans are hot swappable. To maintain proper cooling and not to have system automatically shutdown, replace only one fan at a time.

Note:

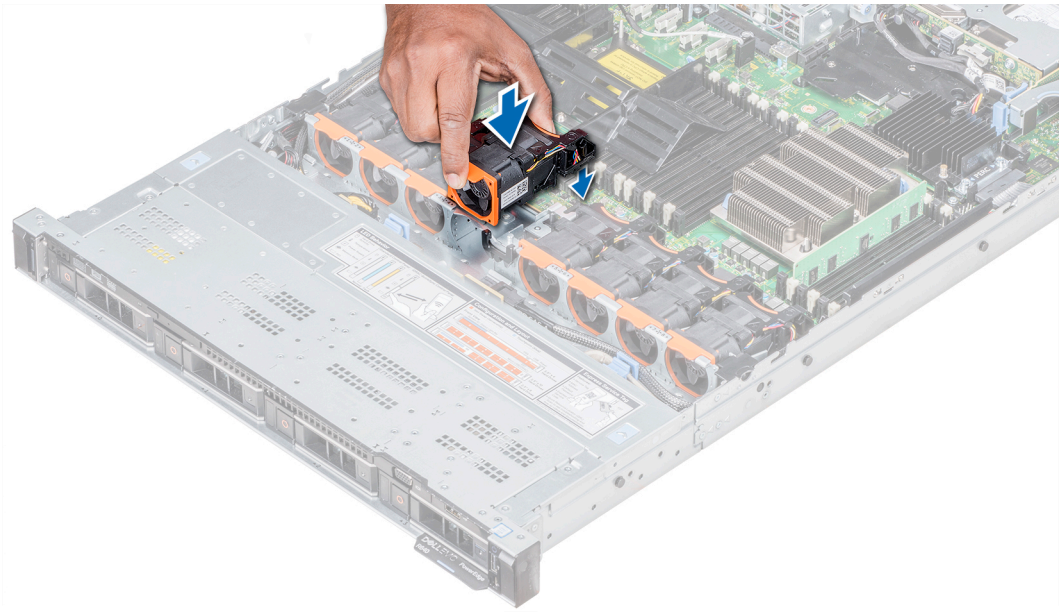
Even though fans are considered hot swappable, Avaya recommends shutting down the applications/server before replacing a fan.

Procedure

1. Remove the cooling fan.
   a. Holding the touch points on the cooling fan, lift the fan to disconnect the connector on the fan from the connector on the system board.
   b. Lift the fan out of the system.



2. Install the cooling fan.
   a. Holding the touch points on the cooling fan, align the connector on the cooling fan with the connector on the system board.
   b. Push the cooling fan, by pressing on the touch point, until the fan is firmly seated on the connector.



3. Reinstall the system lid and review fan status.

Chapter 21: R640 System Memory

System memory

Memory overview

Avaya systems ship with DDR4 registered DIMMs (RDIMMs). System memory holds the instructions that are executed by the processor. Currently, Avaya Solutions Platform R640 systems only support RDIMMs.

Memory bus operating frequency operates on 2933 MT/s, 2666 MT/s, 2400 MT/s, or 2133 MT/s.

Memory bus for new Profile 4 and 5 operates at 2933MHz. Servers and FRU DIMMs have speeds up to 3200MHz on the same part number. Higher speed rated DIMMS are backward compatible with slower speed DIMMs.

The memory system contains 24 memory sockets split into two sets of 12 sockets, one set per processor. Each 12-socket set is organized into six channels. In each channel, the release tabs of the first socket are marked white, and the second socket black.

Sample memory configurations

Avaya server memory configurations

The following tables show sample memory configurations for one and two processor configurations that follow the appropriate memory guidelines stated in this section. These are the current Avaya server memory configurations.

Table 9: Sample memory configurations — single processor

System Capacity (in GB)	DIMM Size (in GB)	Number of DIMMs	Server Profile	DIMM Slot Population
24	8	3	2	A1, A2, A3
96	16	6	4	A1, A2, A3, A4, A5, A6

Table 10: Memory configuration — two processors

System Capacity (in GB)	DIMM Size (in GB)	Number of DIMMs	Server Profile	DIMM Slot Population
48	8	6	3	A1, A2, A3 B1, B2, B3

Table continues…

System Capacity (in GB)	DIMM Size (in GB)	Number of DIMMs	Server Profile	DIMM Slot Population
192	16	12	5, 51	A1, A2, A3, A4, A5, A6 B1, B2, B3, B4, B5, B6

General memory module guidelines

Note:

If your system's memory configurations fail to observe these guidelines, your system might not boot, might stop responding during memory configuration, or might operate with reduced memory.

Avaya does not ship or support LRDIMMs.

This system supports Flexible Memory Configuration, enabling the system to be configured and run in any valid chipset architectural configuration. The following are the recommended guidelines for best performance:

- x4 and x8 DRAM based memory modules can be mixed. For more information, see Mode-Specific Guidelines section.
- Up to two RDIMMs can be populated per channel regardless of rank count.
- If memory modules with different speeds are installed, they will operate at the speed of the slowest installed memory module(s) or slower depending on the system DIMM configuration
- Populate memory module sockets only if a processor is installed. For single-processor systems, sockets A1 to A12 are available. For dual-processor systems, sockets A1 to A12 and sockets B1 to B12 are available.
- Populate all the sockets with white release tabs first, followed by the black release tabs.
- When mixing memory modules with different capacities, populate the sockets with memory modules with the highest capacity first. For example, if you want to mix 8 GB and 16 GB memory modules, populate 16 GB memory modules in the sockets with white release tabs and 8 GB memory modules in the sockets with black release tabs.
- In a dual-processor configuration, the memory configuration for each processor should be identical. For example, if you populate socket A1 for processor 1, then populate socket B1 for processor 2, and so on.
- Memory modules of different capacities can be mixed provided other memory population rules are followed. For example, 8 GB and 16 GB memory modules can be mixed.
- Mixing of more than two memory module capacities in a system is not supported.

For additional information, refer to *Dell EMC PowerEdge R640 Installation and Service Manual* available on the vendor's website.

Removing the air/cooling shroud to gain access for system memory replacement

Before you begin

Turn off the system, including any attached peripherals, and disconnect the system from the electrical outlet and peripherals. Shut down according to the Avaya application instructions.

About this task

The air/cooling shroud needs to be removed when servicing memory DIMMs.

Caution:

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

Procedure

1. Open the system.
2. Hold the touch points and lift the shroud away from the system.

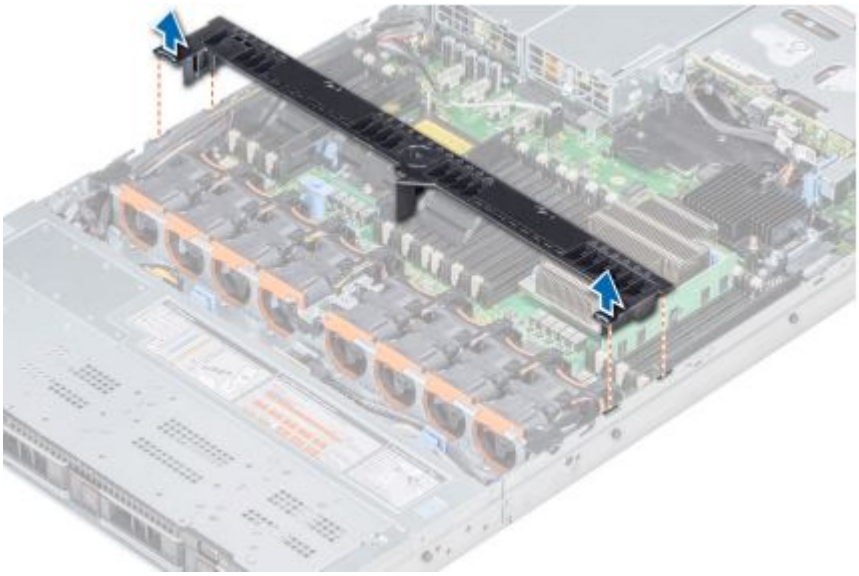


Figure 27: Air/cooling shroud

3. To install, align the tabs on the air/cooling shroud with the securing slots on the chassis and lower the air/cooling shroud into the chassis until it is firmly seated.
4. Close the system before reconnecting the disconnected peripherals and power.

Mode-specific guidelines

Six memory channels are allocated to each processor. The configurations allowed depend on the memory mode selected.

DIMM problems

Symptoms

- General memory problems are occurring as indicated by Avaya alarming software. Error codes on LCD display error type that indicate memory error.
- Memory alert messages are sent from iDRAC via SNMP trap mechanism (when properly configured).
- Memory error messages are displayed on console on server boot up or attempted server boot up.
- Server is out of memory as reported by applications.
- Memory count error exists in iDRAC logs and/or System Event Log (SEL).
- The server fails to recognize existing memory and causes Avaya applications to fail or report memory errors in logs and alarms.
- Server fails to recognize new memory.

Troubleshooting memory DIMMs

About this task

Follow the steps below to troubleshoot 8 GB or 16 GB RDIMMs.

Electrostatic alert:

ESD can damage electric circuits. Do not touch electric hardware unless you wear a grounding wrist strap or other static-dissipating device. For more information, see Electrostatic discharge safety on page 25.

Procedure

1. If the system is not operational, turn off the system, and unplug the system from the power source. Wait at least 60 seconds and then reconnect the system to power.
2. Power on the system with keyboard, mouse, and monitor. Note the messages on the console. If an error message is displayed indicating a fault with a specific memory module, go to step 10. Also view the LCD display for error messages. In case of error, replace the indicated memory RDIMM.
3. If using the iDRAC interface, log in to the iDRAC web interface and view status from the **System/Memory** tab.
   a. Verify Individual Memory health. If bad memory is identified, replace RDIMM in designated socket.

      You can also use **Maintenance/System** tab to identify bad memory detected entries.

   b. If you do not observe errors from iDRAC, proceed to running memory diagnostics described in steps below.
4. Turn off the system and disconnect the system from the electrical outlet.
5. Open the system.

6. Check the memory channels and ensure that they are populated correctly. Avaya only ships servers with 8 GB or 16 GB RDIMMS.
   - Memory modules should be identical in size and configuration. Replacement DIMMs may be a faster speed grade, but size and configuration (such as 1Rx4, 2Rx8) should be equivalent for white tab sockets. Black tab sockets, if populated, should have the same size and configuration also, but white socket and black socket DIMMs do not have to be the same. Check the latest Avaya documentation for additional information on adding DIMMs.
   - Ensure that DIMMs are fully seated.
7. Reinstall components and lid.
8. When feasible, power up the server according to Avaya's application procedures.
   a. From the Dell console, when the screen appears, press `F10` to go to the Lifecycle Controller and run the diagnostics from the console.
   b. On the Lifecycle Controller menu, select **Hardware Diagnostics** > **Run Diagnostics**.

      The testing of the server begins. You can abort the testing to select specific component testing by pressing `ESC`.
   c. Select memory testing and view results.
9. Based on diagnostics results, identify the failing RDIMM.
10. Power down system with power button and remove power cords. Open server by removing server lid.
11. If a diagnostic test or error message indicates a specific memory module as faulty, swap or replace the module with a known good memory module. For more information, see Replacing memory DIMMs on page 112.
12. To troubleshoot an unspecified faulty memory module, replace the memory module in the first DIMM socket with a module of the same type and capacity. Remove all other DIMMs. Power up server and observe to see if memory error is reported. If no memory error is reported power down server and insert next DIMM in next appropriate slot designated on decal on inside of server lid. Continue procedure until bad DIMM is determined.
13. Reinstall components and lid.
14. As the system boots, observe any error message that is displayed and the diagnostic indicators on the front of the system.
15. If the memory problem is still indicated, repeat step 9 through step 15 for each memory module installed.

Next steps

If the part is defective, continue with the removal and replacement procedures.

Replacing memory DIMMs

About this task

Follow the steps below and refer to Memory sockets on page 114 to replace a defective RDIMM.

Electrostatic alert:

ESD can damage electric circuits. Do not touch electric hardware unless you wear a grounding wrist strap or other static-dissipating device. For more information, see Electrostatic discharge safety on page 25.

Warning:

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

Caution:

To ensure proper system cooling, memory-module blanks must be installed in any memory socket that is not occupied. Remove memory-module blanks only if you intend to install memory in those sockets.

Procedure

1. Turn off the system according to Avaya application procedures, including any attached peripherals, and disconnect the system from the electrical outlet and peripherals.
2. Open the system.
3. Remove the air/cooling shroud.
4. Locate the appropriate memory module socket(s).
5. Press down and out on the ejectors on each end of the socket until the memory module or memory module blank pops out of the socket.

   Caution:

   Handle each memory module only on either card edge, making sure not to touch the middle of the memory module.
6. Install the memory module socket.
   a. Press the ejectors on the memory module socket down and out to allow the memory module to be inserted into the socket. If a memory module blank is installed in the socket, remove it.
   b. Align the memory module's edge connector with the alignment key of the memory module socket, and insert the memory module in the socket.

      The memory module socket has an alignment key that allows you to install the memory module in the socket in only one way.
   c. Push down the memory module on one side and then the other side of the DIMM until the socket levers latches into a locked position. When the memory module is properly

seated in the socket, the levers on the memory module socket align with the levers on the other sockets that have memory modules installed.

7. Install memory-module blanks in vacant memory-module socket(s) to ensure proper system cooling.
8. Install the air/cooling shroud.
9. Close the system.
10. Reconnect the system to its electrical outlet and turn the system on, including any attached peripherals.
11. Watch system boot up screens for any error messages.
12. Check the system memory capacity.
13. On the console screen, press **F2** to go to the **System Setup** menu, and then use the arrow keys to select **Memory Settings**.
14. Press **Enter**.

    The system should reflect the newly installed memory.
15. Press **Esc** to exit.
16. If the memory size value is incorrect, one or more of the memory modules might not be installed properly, repeat step 4 through step 6.

Memory socket locations

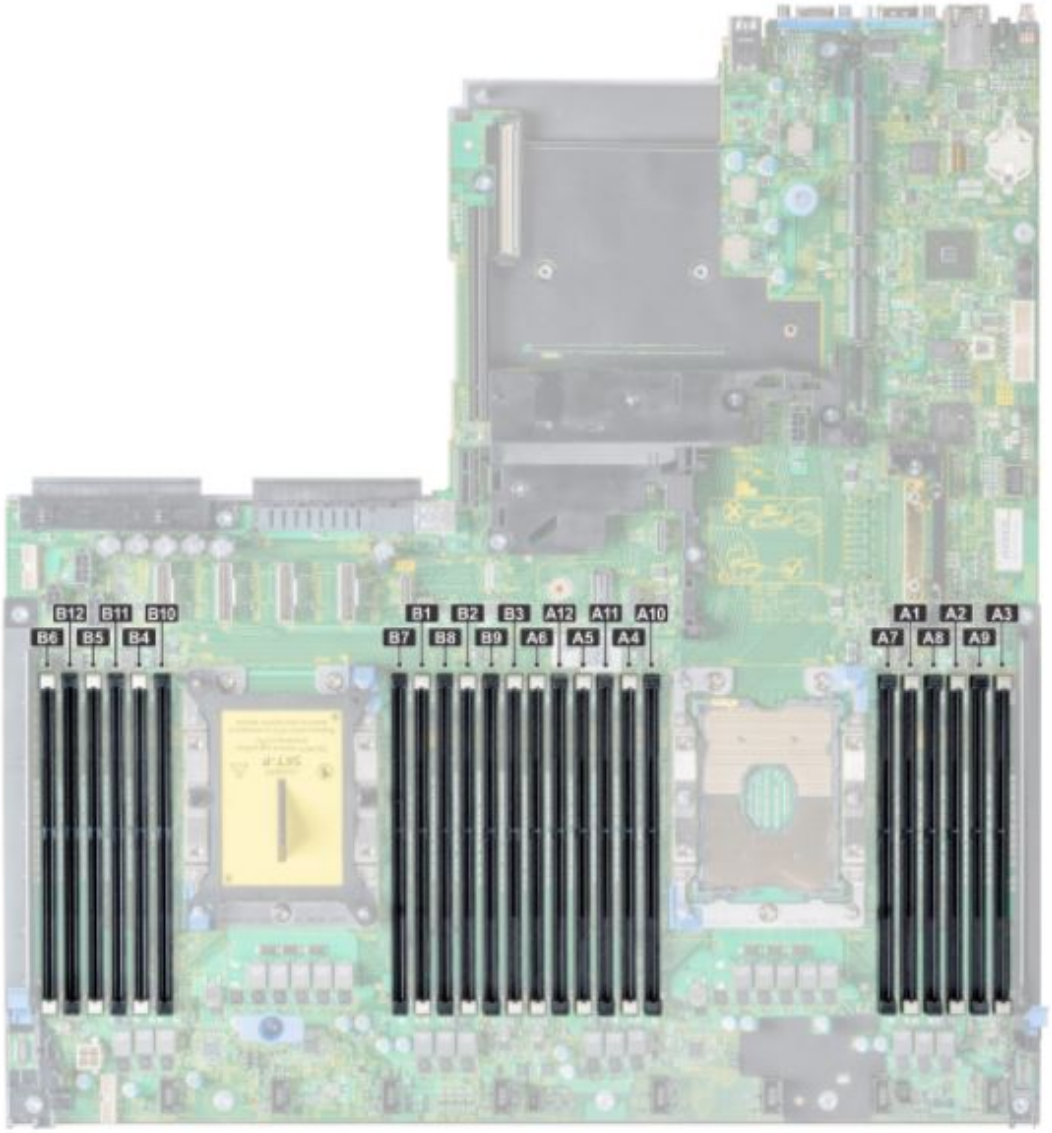


Figure 28: Memory sockets

Processor	Channel and slots
Processor 1	Channel 0: slots A1 and A7
	Channel 1: slots A2 and A8
	Channel 2: slots A3 and A9
	Channel 3: slots A4 and A10
	Channel 4: slots A5 and A11
	Channel 5: slots A6 and A12

Table continues…

Processor	Channel and slots
Processor 2	Channel 0: slots B1 and B7
	Channel 1: slots B2 and B8
	Channel 2: slots B3 and B9
	Channel 3: slots B4 and B10
	Channel 4: slots B5 and B11
	Channel 5: slots B6 and B12

Chapter 22: R640 Network Interface Cards (NIC)

1 GbE Network Interface Cards (NIC)

Symptoms

- Network controller is installed but not working.
- Network controller has stopped working.

NIC Indicator Codes

The NIC Indicator has two LED indicators.

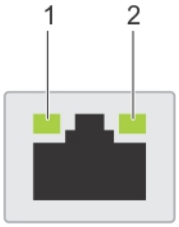


Figure 29: NIC LED indicators

1. Link indicator
2. Activity LED indicator

Table 11: Indicator codes

Status	Condition
Link and activity indicators are off	The NIC is not connected to the network.
Link indicator is green and activity indicator is blinking green	The NIC is connected to a valid network at its maximum port speed and data is being sent or received.
Link indicator is amber and activity indicator is blinking green	The NIC is connected to a valid network at less than its maximum port speed and data is being sent or received.
Link indicator is green and activity indicator is off	The NIC is connected to a valid network at its maximum port speed and data is not being sent or received.

Table continues…

Status	Condition
Link indicator is amber and activity indicator is off	The NIC is connected to a valid network at less than its maximum port speed and data is not being sent or received.
Link indicator is blinking green and activity is off	NIC identify is enabled through the NIC configuration utility.

Troubleshooting a NIC

Procedure

1. View the server LCD display and System Status LED indicators for error indicators or messages.
2. Check the appropriate indicator on the NIC connector:
   a. If the link indicator does not light, check all cable connections.
   b. If the activity indicator does not light, the network driver files might be damaged or missing.
   c. Replace cable with known good network cable and view link status.
   d. Use another connector on the data switch.
   e. Check data switch configuration for proper administration.
3. If iDRAC interface is being utilized, log in to the iDRAC web interface and view status from the System/Network Devices.

   Verify NIC status is healthy and view individual NIC port state, statistics and configuration. Verify information is consistent with intended installation. That is, Enabled, Link status, Protocol, OS state, port statistics, and so on.
4. Ensure that the NIC is configured correctly in KVM on RHEL. Refer to Installing the Avaya Solutions Platform 130 Series Release 6.0.x guide.
5. Ensure that the Avaya Solutions Platform 130 server NICs and data switch ports are all set to the same data transmission speed and duplex.
6. Ensure that all network cables are of the proper type and do not exceed the maximum length.

   Note:

   Always use 1000BaseT UTP (CAT5e) cables as a minimum or 1000BaseTX UTP (CAT6) cables.
7. Perform the following steps for additional debugging:

   Note:

   A keyboard and monitor is required to connect to the server console.

   a. When feasible, reboot the server according to Avaya's application instructions.

b. From Dell console, press `F10` to go to **Lifecycle controller** menu and run the diagnostics from the console.

c. Select **Hardware Diagnostic** > **Run Diagnostics**.

This begins the testing of a server. You can abort the testing to select specific component by pressing `ESC`.

d. Select network interface for testing and view results.

Next steps

If the part is defective, continue with the removal and replacement procedures.

Replacing the on-board 4x1GbE network daughter card (NDC)

Before you begin

Note:

These procedures are used for either the Intel based network daughter card or Broadcom based network daughter card.

Locate the following components on the system board:

1. On-board 4 port network daughter card (NDC) and riser card connector on the System Board. See Figure 30: Removing Expansion riser 2B if present (2 CPU systems only) on page 119 and Figure 31: Removing the Network daughter card on page 120 below.
2. Touch Points of riser and daughter card
3. Captive screws securing network daughter card to the system board
4. Expansion riser 2B (2 CPU systems only)
5. Network Daughter Card (NDC)
6. Back Panel Slots for Ethernet connectors
7. Ensure the proper replacement 4x1GbE NDC has been procured and is available.

Caution:

Always practice safe electrostatic discharge procedures. For more information, see Electrostatic discharge safety on page 25.

Procedure

1. Power down the server according to Avaya's application instructions and disconnect the system from the electrical outlet. Remove network cables if applicable.
2. Open the server lid. If working on a single CPU system move to next step. Dual CPU systems will have the 2B riser populated. Remove the expansion card riser 2B. See Figure 30: Removing Expansion riser 2B if present (2 CPU systems only) on page 119. A 2 port NIC card will be populated in expansion riser 2B in dual CPU systems with an H750 RAID controller. If that NIC card is operating as expected leave it inserted in its PCIe connector of riser 2B.

3. Refer to Figure 31: Removing the Network daughter card on page 120 while performing this step. Using a #2 Phillips screwdriver, loosen the captive screws that secure the Network Daughter Card (NDC) to the system board.
4. Hold the network daughter card by the edges on either side of the touch points and lift to remove it from the connector on the system board. See Figure 31: Removing the Network daughter card on page 120.
5. Slide the NDC towards the front of the system until the Ethernet connectors are clear of the slot in the back panel.
6. To reinstall the card, angle the card so that the RJ-45 connectors fit through the slot in the back panel.
7. Align the captive screws at back-end of the card with the screw holes on the system board.
8. Press the touch point on the card to ensure that connector on the card is in contact with the connector on the system board.
9. Using a #2 Phillips screwdriver, tighten the two captive screws to secure the network daughter card to the system board.
10. Install the expansion-card riser if applicable.
11. Close the system.
12. Reconnect the system to its electrical outlet and turn the system on, including any attached peripherals.

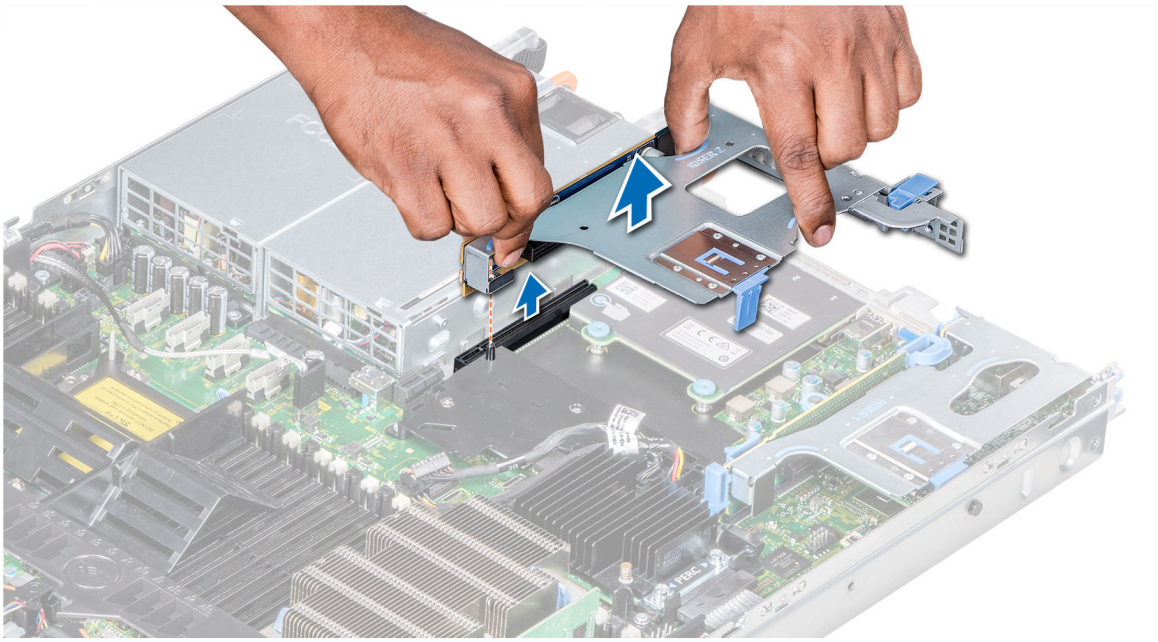


Figure 30: Removing Expansion riser 2B if present (2 CPU systems only)

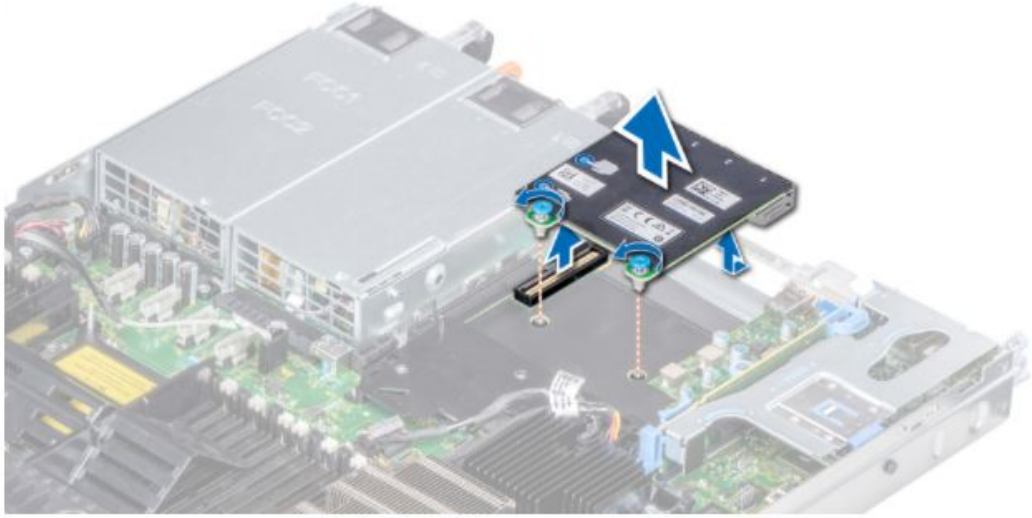


Figure 31: Removing the Network daughter card

Replacing the 2 Port PCIe network card

Before you begin

Locate the following components on the system board. See Figure 32: Remove the expansion riser 1B (2 CPU systems with H730P RAID Controller) on page 121 and Figure 33: Remove expansion riser 1A (1 CPU systems with H730P or H750 RAID Controller) on page 122 below:

1. Expansion card riser that PCIe NIC card is located in.
   - The 2 port PCIe Network card is located in PCIe slot 1 of systems with a H730P mini-RAID controller.
   - The 2 port PCIe Network card is located in PCIe slot 2 of systems with a H750 RAID controller.
2. Back Panel Slots for Ethernet connectors.

Note:

The replacement PCIe network card for a 2 CPU H750 RAID controller configuration requires a full height face plate. The replacement PCIe network card for a single CPU H750 RAID controller configuration requires a half-height face plate.

Note:

Always practice safe electrostatic discharge procedures. For more information, see Electrostatic discharge safety on page 25.

Procedure

1. Power down the server according to Avaya's application instructions and disconnect the system from the electrical outlet. Remove network cables of NIC card to be removed if applicable.

H730P RAID controller system

2. Open the server lid and remove the expansion card riser 1B populated in 2 CPU systems or riser 1A populated in 1 CPU systems. See Figure 32: Remove the expansion riser 1B (2 CPU systems with H730P RAID Controller) on page 121 and Figure 33: Remove expansion riser 1A (1 CPU systems with H730P or H750 RAID Controller) on page 122.

H750 RAID controller system

3. Open the server lid and remove the expansion card riser 2B populated in 2 CPU systems or riser 1A populated in 1 CPU systems. See Figure 34: Remove expansion riser 2B (2 CPU systems with H750 RAID controller) on page 122 and Figure 33: Remove expansion riser 1A (1 CPU systems with H730P or H750 RAID Controller) on page 122.
4. Once the riser has been removed, remove the NIC card from the riser card assembly. See Figure 35: Remove NIC card from expansion riser 1B (2 CPU system with H730P RAID controller) on page 123 and Figure 36: Remove NIC card from expansion riser 1A (1 CPU system with H730P or H750 RAID controller) on page 123.
5. Hold the network card by the edges on either side of the touch points and lift to remove it from the connector. See Figure 35: Remove NIC card from expansion riser 1B (2 CPU system with H730P RAID controller) on page 123 and Figure 36: Remove NIC card from expansion riser 1A (1 CPU system with H730P or H750 RAID controller) on page 123.
6. Ensure Ethernet connectors are clear of the back panel slot of the riser.

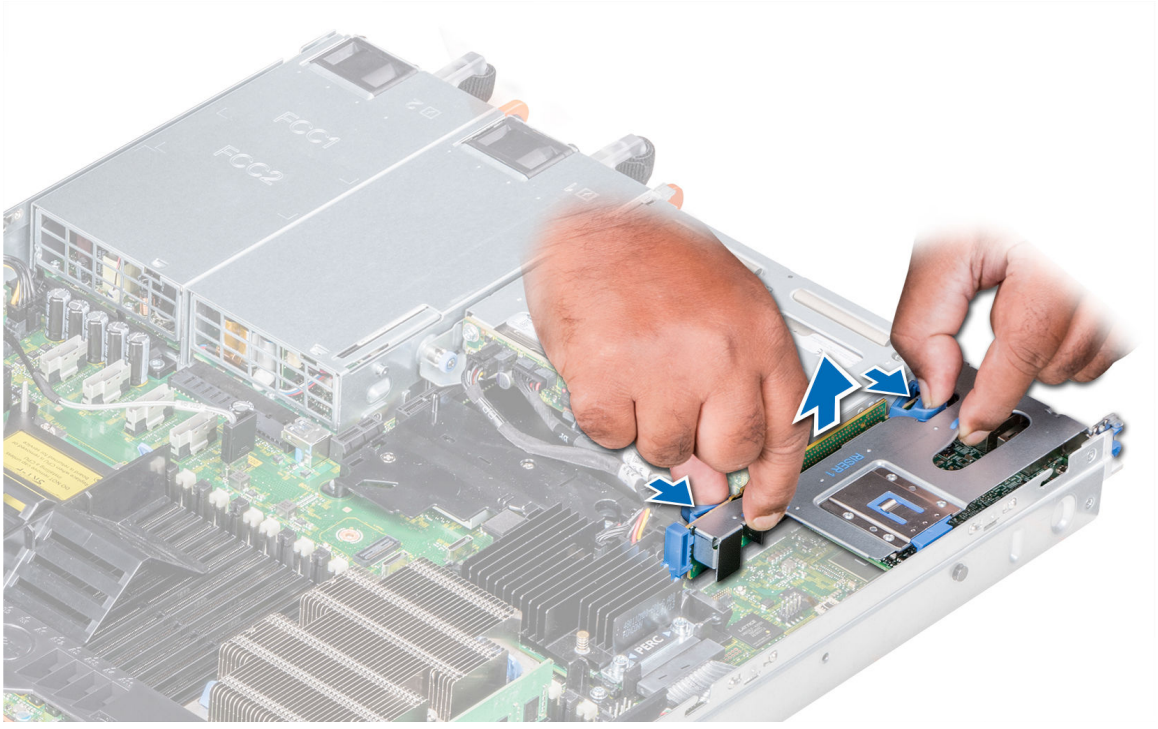


Figure 32: Remove the expansion riser 1B (2 CPU systems with H730P RAID Controller)

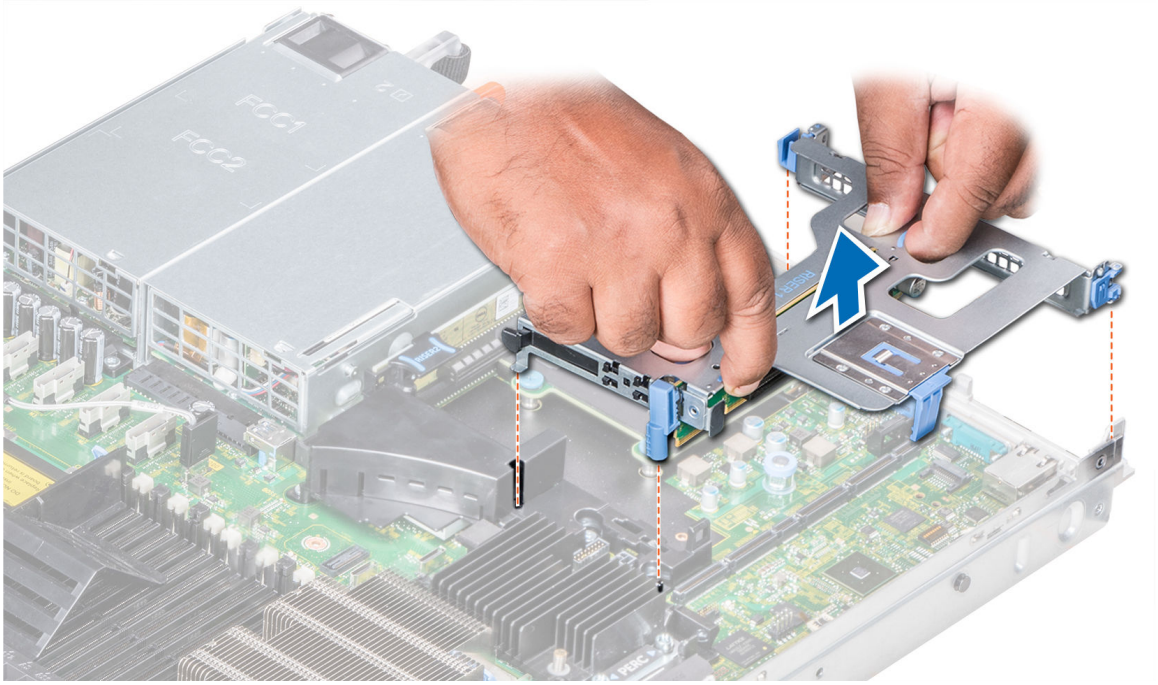


Figure 33: Remove expansion riser 1A (1 CPU systems with H730P or H750 RAID Controller)

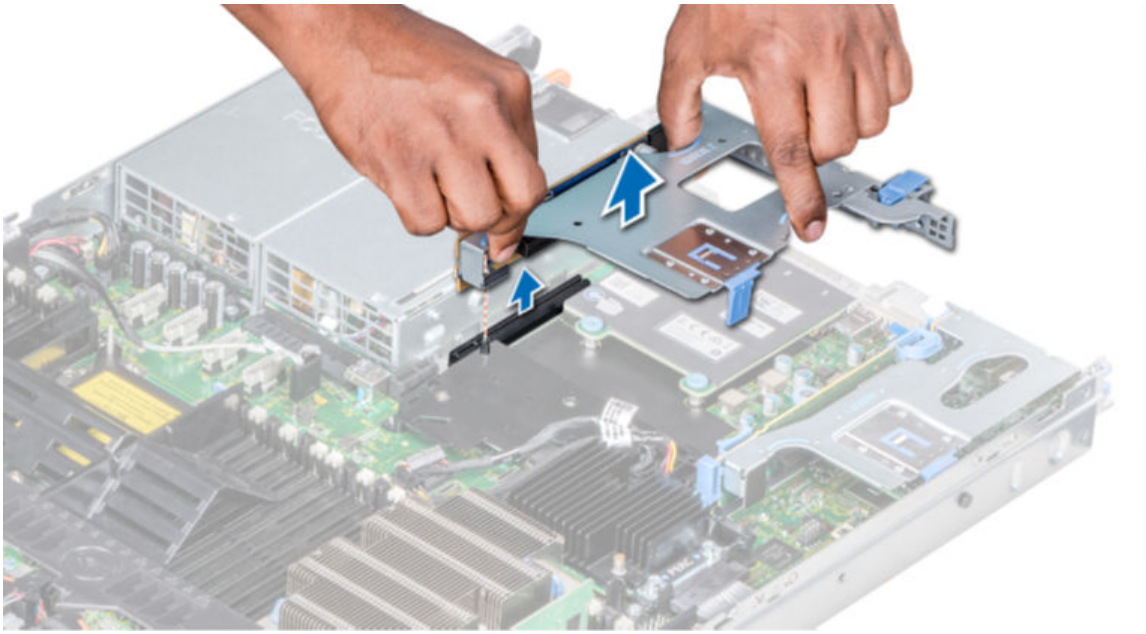


Figure 34: Remove expansion riser 2B (2 CPU systems with H750 RAID controller)

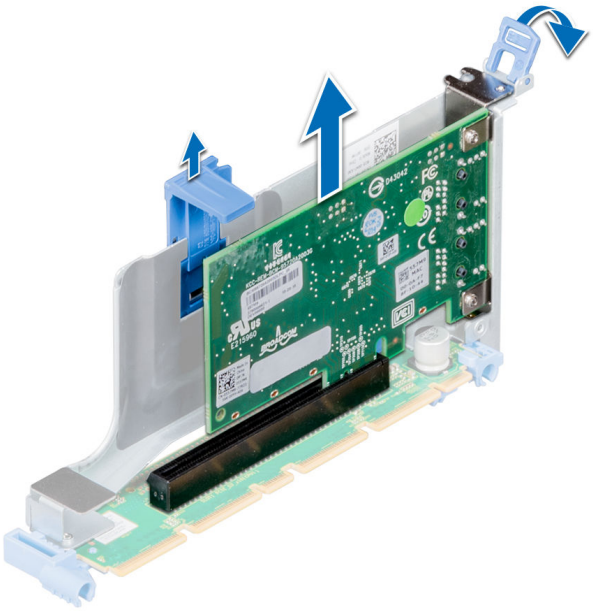


Figure 35: Remove NIC card from expansion riser 1B (2 CPU system with H730P RAID controller)

Similar NIC removal procedure for expansion riser 2B (2 CPU system with H750 RAID controller).

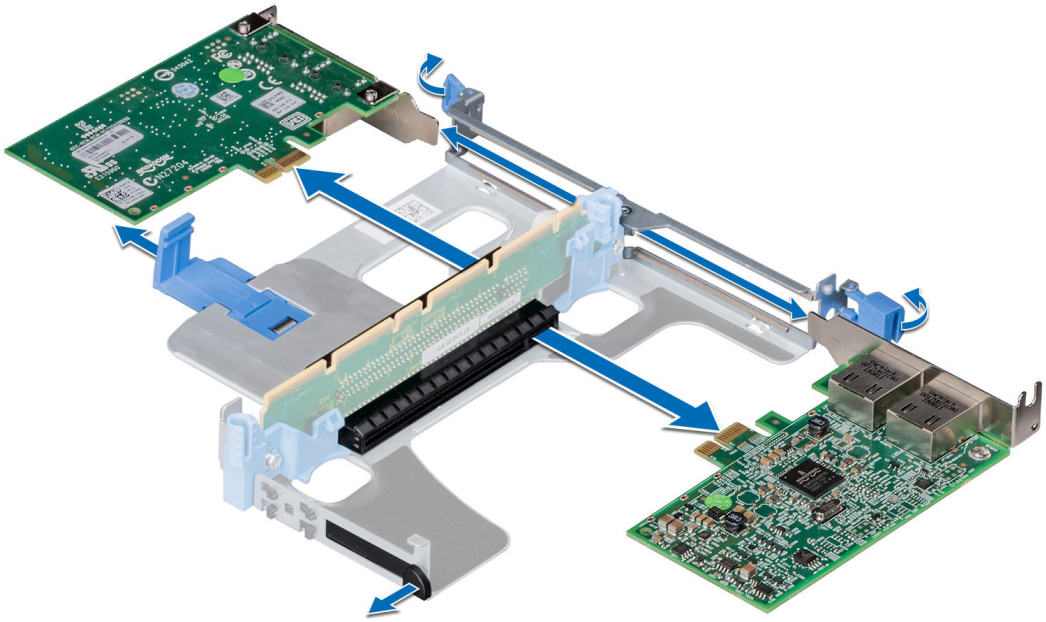


Figure 36: Remove NIC card from expansion riser 1A (1 CPU system with H730P or H750 RAID controller)

7. To install the replacement NIC card, angle the card so that the RJ-45 connectors fit through the slot in the riser back panel. In H730P RAID controller systems, install the NIC card in PCIe slot 1. In H750 RAID controller systems, install the NIC card in PCIe slot 2.

8. Insert the replacement NIC card edge connector firmly into the riser expansion card connector until the NIC card is fully seated.
9. Close expansion card latches.
10. Install the expansion-card riser with replacement NIC into system mother board.
11. Close the system.
12. Reconnect the system to its electrical outlet and turn the system on, including any attached peripherals.

Chapter 23: R640 RAID Battery

RAID Battery

Note:

Customers must check the base server comcode and verify which RAID controller is in their system.

Processes for replacement differ based on the RAID controller, H730 vs H750.

The H730 RAID battery is a consumable item and therefore is considered a customer replaceable unit (CRU). The RAID battery is not covered under the maintenance agreement. Customer is responsible for the Avaya Solutions Platform server RAID Battery replacement.

The H750 RAID battery is not a separate orderable entity. In the event of a failure of the RAID Battery, the RAID Card will need to be ordered for replacement.

RAID Battery or RAID Card can be ordered from the Avaya Catalogue. It is possible to place an order to have Avaya perform the replacement.

Note:

ASP R6.0.0.1 or later includes **`perccli`** command support to enable users to query RAID battery health. Reference Chapter 31: Dell R660xs and R640 perccli debugging on page 162.

Symptoms

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

Note:

- Due to supply chain issues the H730P was replaced by the H750 RAID controller in 4QCY2022. Their menus and configuration steps are very similar to one another.
- The batteries used by the H730P and H750 are different. See RAID Battery ordering information on page 133 for additional information and order codes.

Checking the RAID battery health using system setup menu

About this task

Use this procedure to check RAID battery health using the system setup menu.

Caution:

This procedure affects service so perform this step if suitable.

Note:

A keyboard and monitor is required to connect to the server console.

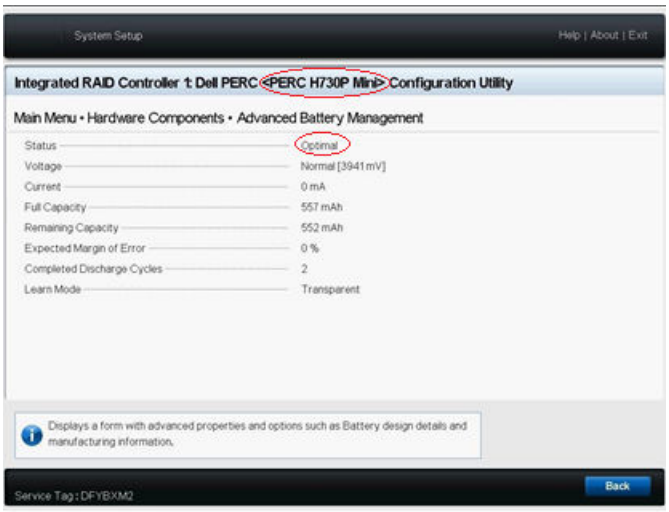
Procedure

1. Shut down or reboot application according to application documentation, if applicable.
2. When prompted on the Dell hardware boot screen, select `<F2> System Status`.
3. On the System Setup screen, in the System Setup Main Menu, select **Device Settings**.
4. On the Device Settings page, select **Integrated RAID Controller 1: Dell PERC <PERC H730P Mini> Configuration Utility** > **Hardware Components** > **Battery Management** > **Advanced Battery Management**.

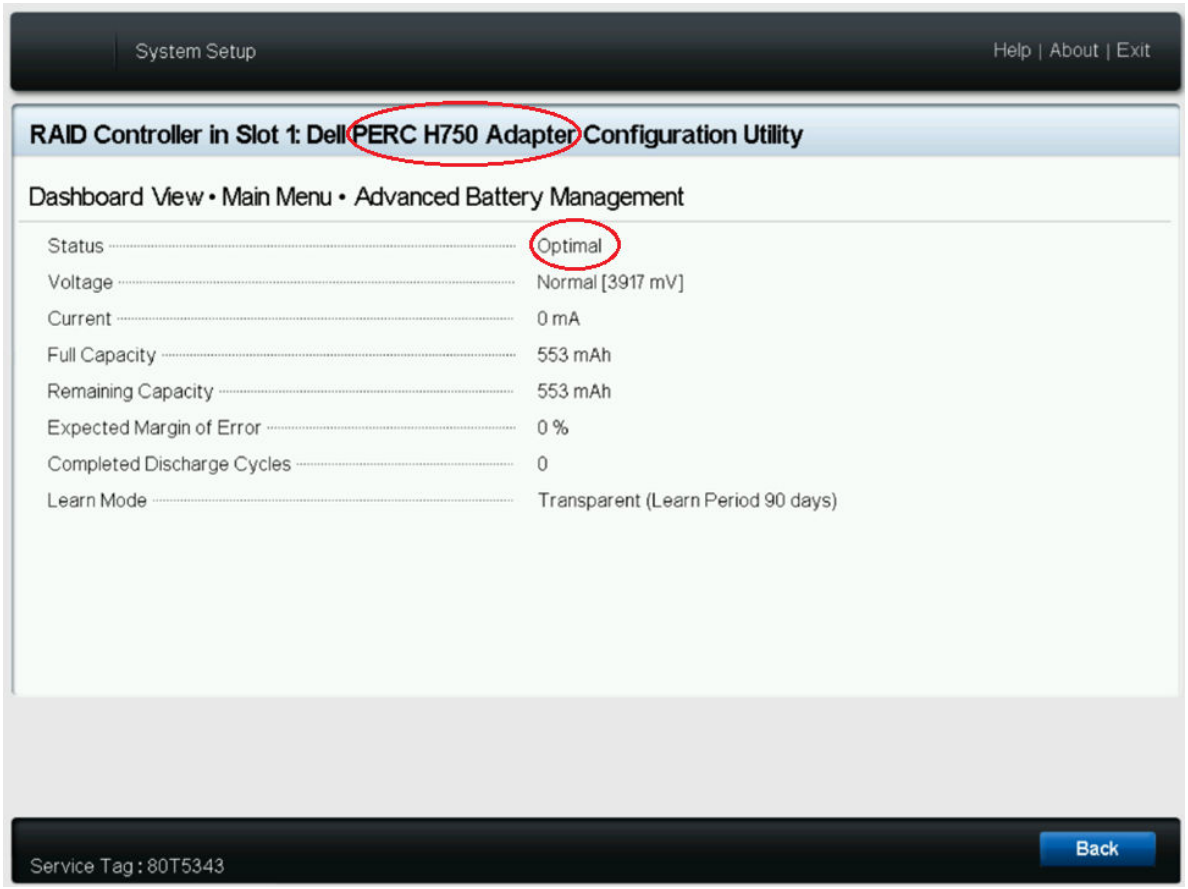
   If server has the H750 RAID controller the selection will be: **RAID Controller in Slot 1: Dell PERC H750 Adapter Configuration Utility** > **Main Menu** > **Hardware Components** > **Battery Management** > **Advanced Battery Management**.

5. For either the H730P or H750 RAID controller ensure that the status is optimal and battery has minimum 200 mAh remaining capacity. If the value is below 200 mAh, replace the battery as soon as possible. The RAID cache will go into write through mode at 135mAh. When this occurs server disk writes will be governed by disk drive speeds and will degrade system performance.

H730P:


System Setup
Help | About | Exit
Integrated RAID Controller 1: Dell PERC <PERC H730P Mini> Configuration Utility
Main Menu • Hardware Components • Advanced Battery Management
Status Optimal
Voltage Normal [3941 mV]
Current 0 mA
Full Capacity 557 mAh
Remaining Capacity 552 mAh
Expected Margin of Error 0 %
Completed Discharge Cycles 2
Learn Mode Transparent
Displays a form with advanced properties and options such as Battery design details and manufacturing information.
Service Tag : DFYBXM2
Back

H750:


System Setup
Help | About | Exit
RAID Controller in Slot 1: Dell PERC H750 Adapter Configuration Utility
Dashboard View • Main Menu • Advanced Battery Management
Status Optimal
Voltage Normal [3917 mV]
Current 0 mA
Full Capacity 553 mAh
Remaining Capacity 553 mAh
Expected Margin of Error 0 %
Completed Discharge Cycles 0
Learn Mode Transparent (Learn Period 90 days)
Service Tag : 80T5343
Back

Checking the RAID battery health using the iDRAC

About this task

Use this procedure to check RAID battery health using the iDRAC menu. This procedure is valid for both the H730P and H750 RAID controllers. This procedure indicates if a RAID battery is healthy or not. Detailed information about the actual charge values of the battery can be viewed using system set up procedures documented above.

Note:

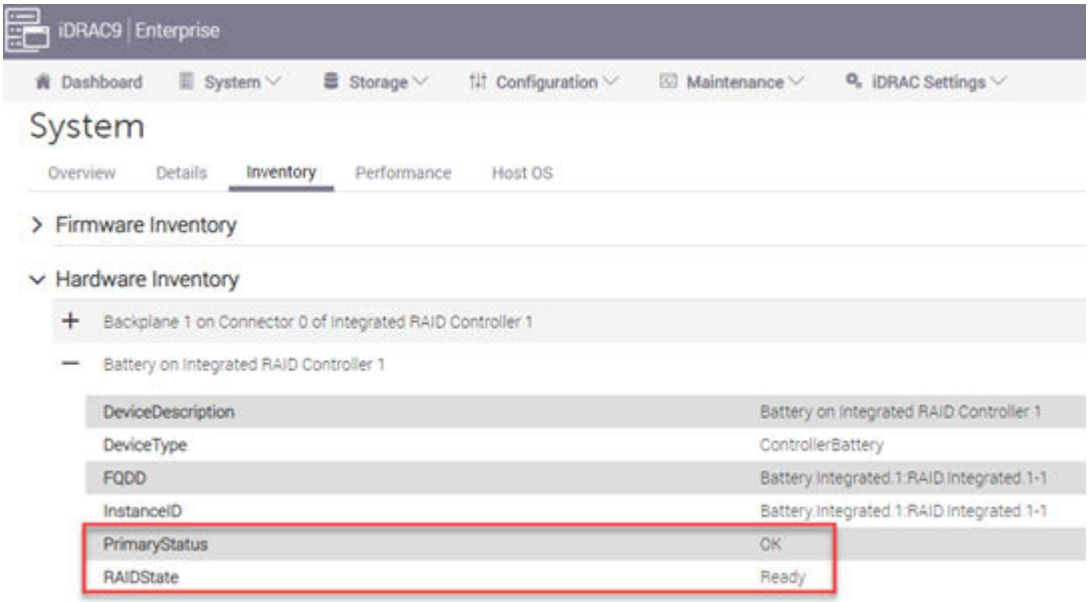
The latest version of iDRAC is iDRAC 9. All Dell R640s implement iDRAC9.

Before you begin

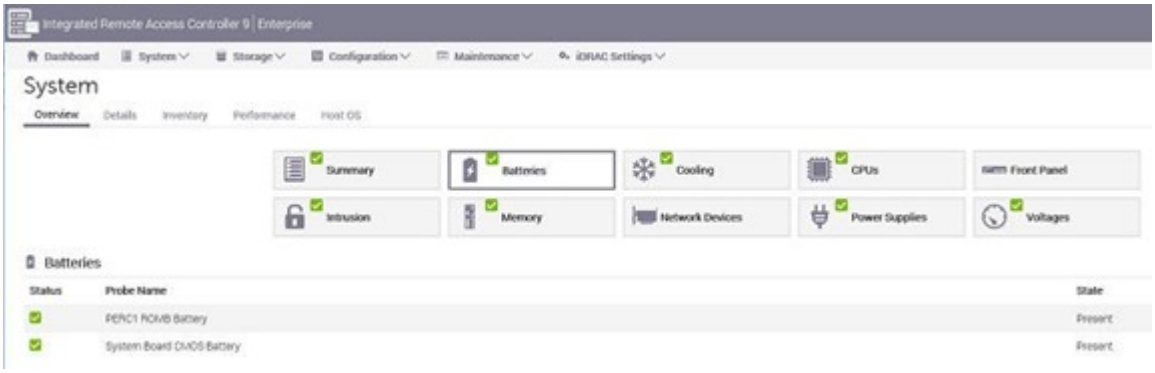
Ensure that you have the iDRAC login credentials.

Procedure

1. Log in to the iDRAC interface.
2. Navigate to **System** > **Inventory** > **Hardware Inventory**.
3. For the H730P, click **Battery on Integrated RAID Controller 1**. For the H750 click **Battery on RAID Controller in Slot 1**.



The health of the battery is displayed. You can also check the battery health from the **Overview** tab of the iDRAC interface. The green symbol indicates a healthy battery.



Checking the RAID battery health from Lifecycle Controller menu

About this task

Use this procedure to check RAID battery health from Lifecycle Controller menu. This procedure indicates if a RAID battery is healthy or not. Detailed information about the actual charge values of the battery can be performed using system set up procedures documented above.

⚠ Caution:

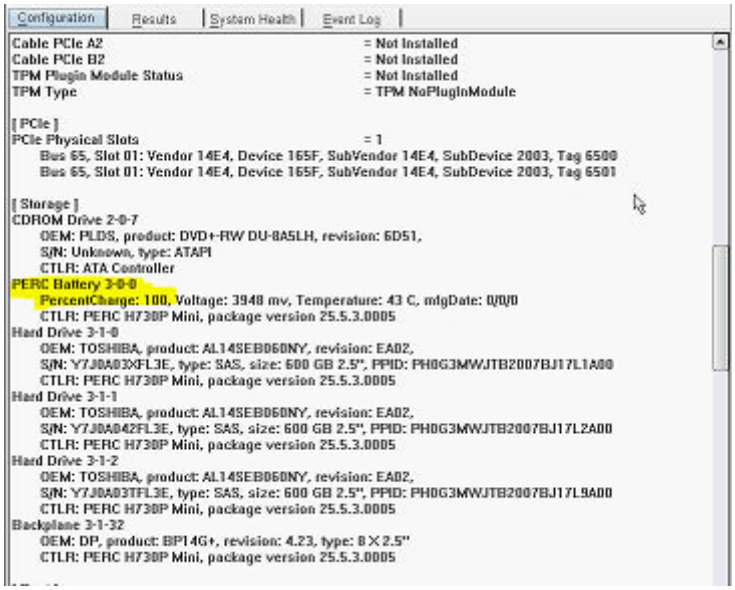
This procedure affects the service, so perform this step if suitable.

Procedure

1. Reboot the server according to Avaya application procedure.
2. Connect a monitor, USB keyboard, and mouse to the Dell R640 server, and perform the following:
   a. From the Dell Splash screen, press `F10` to go to the Lifecycle Controller. If prompted, cancel the Setup wizard.
   b. On the Lifecycle Controller menu, click **Hardware Diagnostics** > **Run Hardware Diagnostics**.

      The testing of a server begins. You can abort the testing to select specific component testing by pressing `ESC` and then selecting **+**.
   c. On the **ePSA Pre-boot System Assessment** menu, in the **Configuration** tab, scroll down and select **PERC Battery** to see the percentage of battery charge.

      If the battery percentage gets equal to or below 30%, replace the battery.



Replacing the H730P RAID battery

About this task

Use this procedure to replace the H730P RAID Battery.

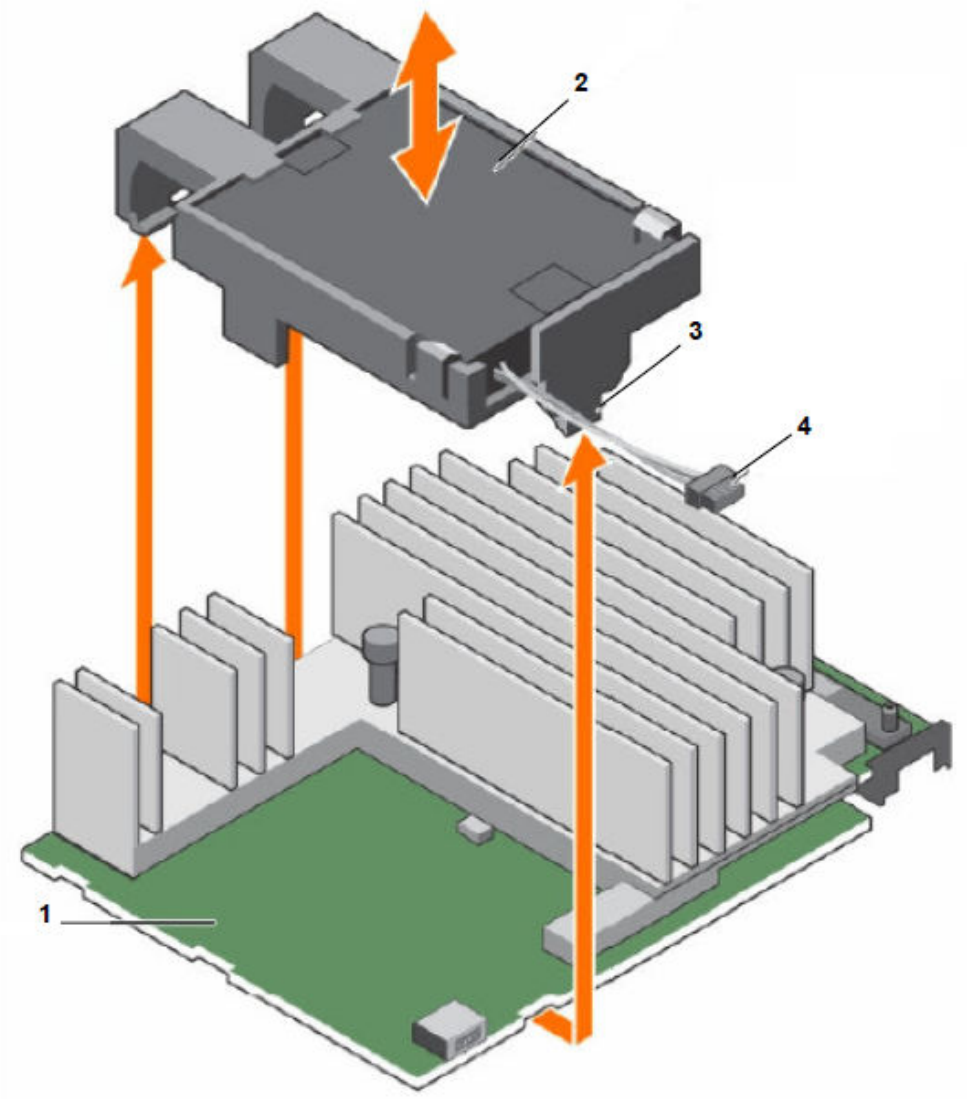
Before you begin

Turn off the system including any attached peripherals and disconnect the system from the electrical outlet and peripherals. Shut down the server according to the Avaya application instructions.

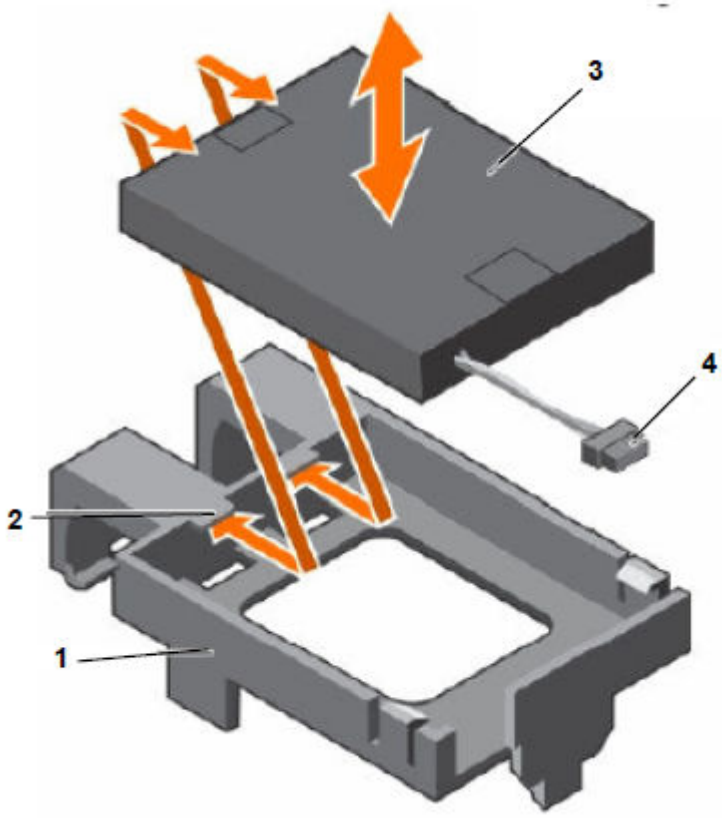
Ensure to follow safe electrostatic discharge practices.

Procedure

1. Open the system.
2. Locate the PERC H730P card on the system board. Refer to the figure on page 131.
3. Remove the H730P PERC card.
4. Disconnect the battery cable from the PERC card.
5. Pull the battery carrier until the tabs on the battery carrier are removed from the PERC card.
6. Pull the battery out of the battery carrier.



Item	Description
1	PERC H730P mini monolithic card
2	Battery
3	Tab on the battery carrier
4	Battery cable



Item	Description
1	Battery Carrier
2	Guide on the battery carrier
3	Battery
4	Cable

7. Place the replacement battery such that it aligns with the guides on the battery carrier.
8. Lower the battery into the carrier until the battery is firmly seated.
9. Align the tabs on the battery carrier with slots on the PERC 9 (H730P) mini monolithic controller and lower the battery carrier until the carrier is firmly seated.
10. Connect the battery cable to the PERC card.
11. Reinstall the PERC card and close the system.
12. Reconnect the system to its electrical outlet and turn the system on, including any attached peripherals.

Replacing the H750 RAID battery

About this task

The H750 RAID battery is not a separate orderable entity. In the event of a failure of the RAID Battery, the RAID Card will need to be ordered for replacement.

RAID Battery ordering information

Note:

Customers must check the base server comcode and verify which RAID controller is in their system.

Processes for replacement differ based on the RAID controller, H730P vs H750.

The H730 RAID battery is a consumable item and therefore is considered a customer replaceable unit (CRU). The RAID battery is not covered under the maintenance agreement. Customer is responsible for the Avaya Solutions Platform server RAID Battery replacement.

The H750 RAID battery is not a separate orderable entity. In the event of a failure of the RAID Battery, the RAID Card will need to be ordered for replacement.

RAID Battery or RAID Card can be ordered from the Avaya Catalogue. It is possible to place an order to have Avaya perform the replacement.

Part number	Description
700514186	ACP DELL RAID BATTERY FRU (H730P)
700516327	ASP DELL R640 CLv2 H750 RAID CARD FRU (H750 includes battery)

Note:

If a server with the H730P RAID Controller needs to be replaced, verify charge values of all working RAID batteries and use the one with the highest charge value.

Chapter 24: R640 RAID Controller

RAID Controller (Dell PERC H730P and H750)

Note:

A RAID controller failure is rare. Perform troubleshooting of all other possible component failures before indicting the RAID controller. However, if the RAID battery fails in an H750 controller, the entire RAID controller must be replaced.

Due to supply chain issues the H730P was replaced by the H750 RAID controller in approximately the 4QCY2022. Their menus and configuration steps are very similar to one another.

Symptoms

The following may indicate Raid controller problems:

- Server status LED or drive LED indicator patterns indicate that drives are failing or failed. See Status LED indicators on page 22.
- Multiple or all drive failures are reported/alarmed.
- Virtual Drive and/or H730P/H750 is alarmed by iDRAC.
- PERC Card is not seen/reported by the system's device manager (See step 3 in iDRAC menu below, Troubleshooting the PERC H730P and H750 RAID Controller for details.)
- Data is inaccessible by virtual machines.
- Server response time is slow or frozen.
- System reports foreign drive or drives need to be imported yet no drives were inserted into the system.
- System reports missing drives, yet no drives were removed from the system.
- "No boot device available or Operating System detected" at system boot time.

Troubleshooting the PERC H730P and H750 RAID Controller

About this task

Use this procedure to troubleshoot PERC H730P or H750 RAID controller problems on the R640 server. Virtual drive and hard disk drive (HDD) problems may occur if the RAID Controller is failing or has failed.

Caution:

This troubleshooting procedure can erase data stored on the virtual drive. Before proceeding, if possible, back up files from the virtual drive.

Procedure

Ensure that all drives are fully seated into their drive bay slots. If a drive is reinserted wait for it to rebuild (approximately 30 minutes) before reinserting another drive. Rebuild status can be verified from perccli commands, iDRAC Storage menus or RAID System set-up menus.

Note:

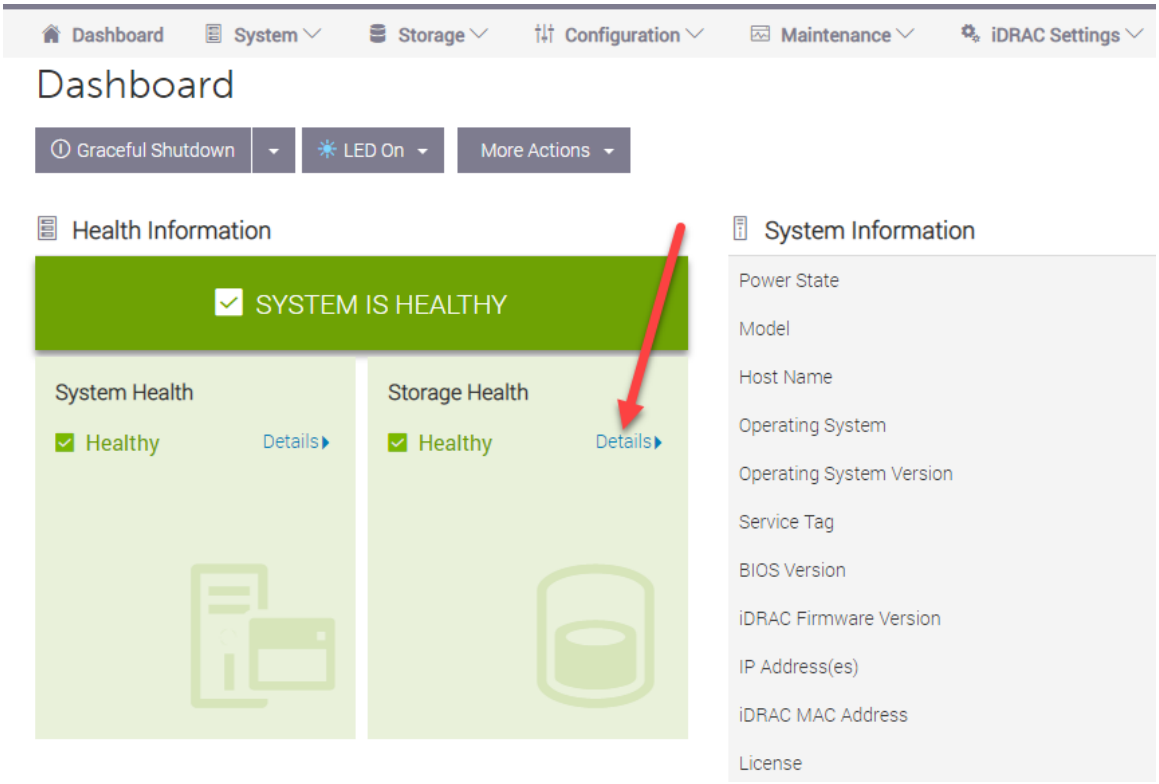
ASP R6.0.0.1 or later includes **`perccli`** command support to enable users to query RAID Controller health. For more information, see Chapter 31: Dell R660xs and R640 perccli debugging on page 162.

Using iDRAC9 for debugging

Procedure

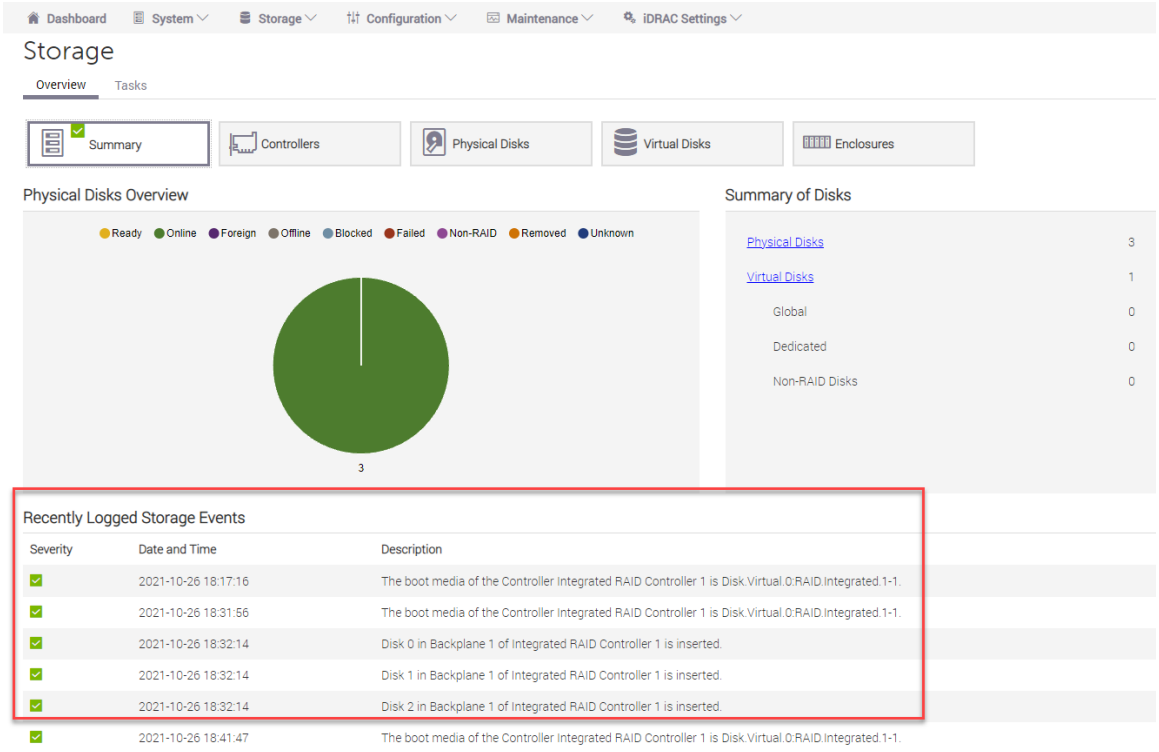
1. Connect to the iDRAC9 through the administered iDRAC network connection or the iDRAC9 direct connect interface on page 89 using micro USB.
2. Log into the iDRAC9 with credentials previously administered. If the iDRAC9 has not been administered, then only the iDRAC9 direct connect will be available: Login is `root` and the password is located on the underneath side of the server pull out toe tag.
3. After logging into the iDRAC, view the dashboard and its **Storage Health**. Select **Details**. If Storage Health Details are not available, then that is an indication that there could be RAID controller problems. Proceed to section Physical Assessment of RAID controller

components and System set-up menus on page 139 if the **Details** option is not available for selection.



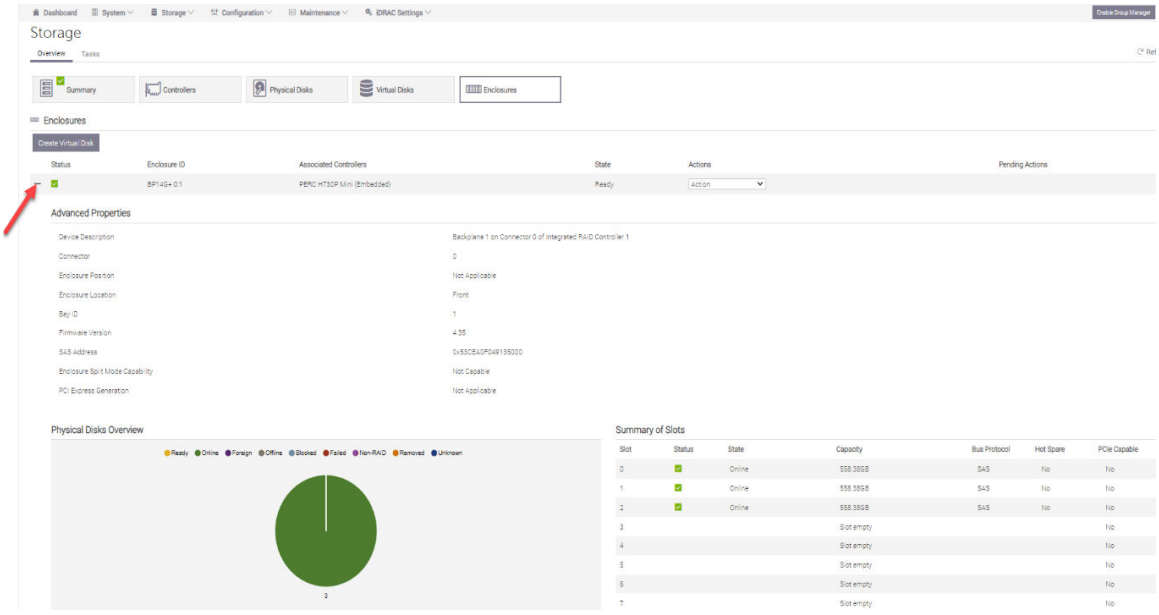
4. View the Logged Storage Events for any errors reported. Green check marks indicate healthy status. If no **Controllers** or **Enclosures** are displayed, then the H730P/H750 is not seen in the Device menus. This could indicate Raid controller problems. Proceed to section Physical Assessment of RAID controller components and System set-up menus on page 139 if no **Controllers** or **Enclosures** tab is available for selection. If the 5 **Overview**

tabs such as **Summary**, **Controllers**, **Physical Disks**, **Virtual Disks** and **Enclosures** are available on the **Storage** page, proceed to the next step.

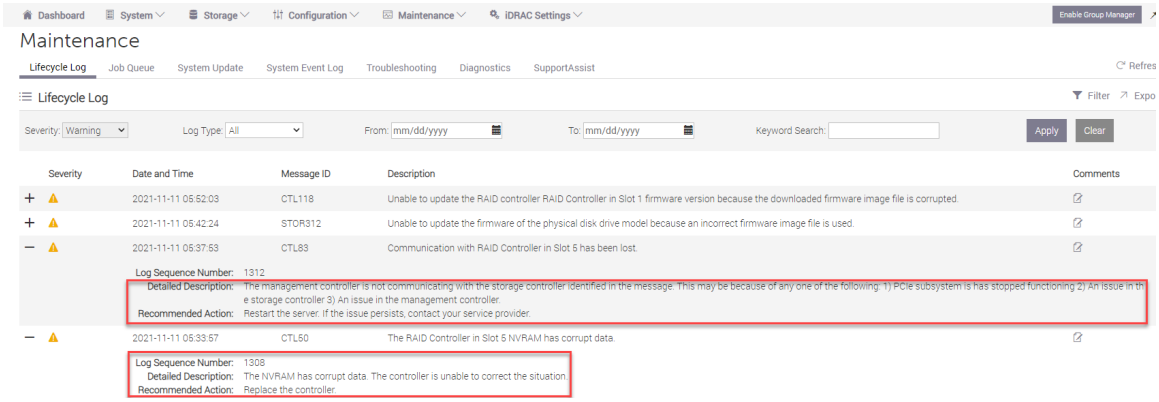


5. Select each tab across the top of this page reviewing information about the **Summary**, **Controller**, **Physical Disks**, **Virtual Disks** and **Enclosures**. If the H730P Controller is suspected, pay special attention to the **Controllers** and **Enclosures** tab information. Selecting the **+** symbol provides detailed information about a component. If the **Controller** and **Enclosures** tab show no errors, but there are errors reported under the **Physical Disks** or **Virtual Disks** then go to those appropriate sections of this document to repair a Physical Disk(s) (refer to the *Hard Disk Drive* chapter) or to create a new Virtual Disk (refer to the *RAID configuration* chapter). If errors are reported under the **Controller** or

Enclosures tab address the errors if enough information is provided. If errors are reported, but more debugging is required go to step *6*.



6. Go to the **Maintenance** > **Lifecycle Log** tabs for information about possible logged storage issues. Select the **+** next to the **Severity** symbol to get additional detail about an error. Below are examples of errors that may be reported about the RAID controller. If errors are reported follow the **Recommended Action**. If no errors are reported go to the *Dell Embedded System Diagnostics* chapter and run applicable Dell system diagnostics or move to section Physical Assessment of RAID controller components and System set-up menus on page 139 to verify PERC card installation and virtual/physical disk configuration. When in the **Diagnostics** menu, press **Escape** to stop the initial start up tests and run the Advanced Options PCIe Bus, PERC Battery, Hard Drive and Backplane Tests. *Shutdown the server according to the application instructions and then restart before entering diagnostics mode.*



Physical Assessment of RAID controller components and System set-up menus

Procedure

1. Shutdown the server according to applications instructions.
2. After the server has completed its shutdown remove the power cords.
3. Open the server lid and locate the PERC H730P module or H750 PCIe Card. Ensure the card is seated firmly and all cables are engaged and secured to their associated connectors. The Backplane designated in the figures below is the backplane used by the HDDs. If connections are suspected, reattach and join connectors. After connections are secured, place lid back on server.

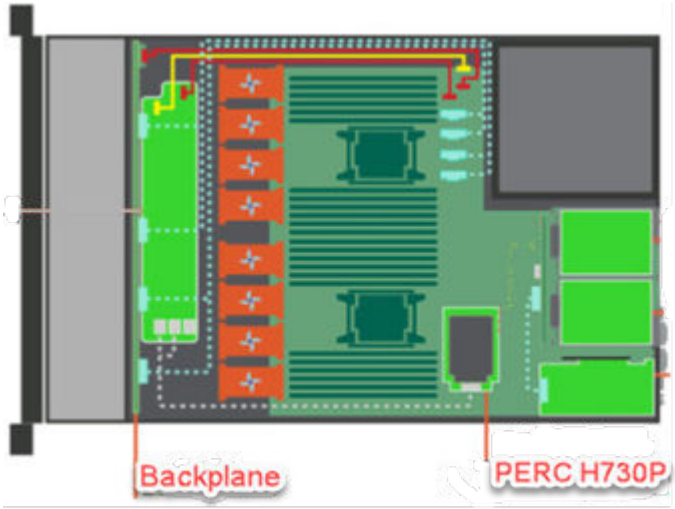


Figure 37: PERC H730P card location

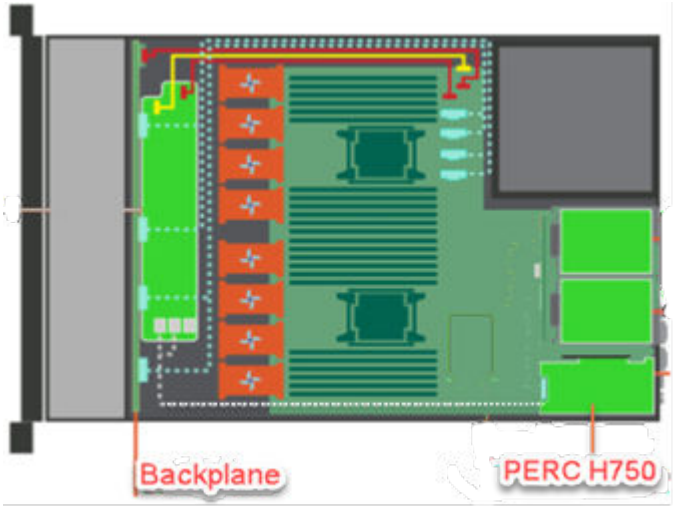


Figure 38: PERC H750 card location

4. Install the power cords and power up the server.
5. Select **F2** when prompted to enter System Setup.
6. For the H730P select **Device Settings/Integrated RAID Controller 1: Dell PERC <PERC H730P Mini> Configuration Utility**. For the H750 select **Device Settings > RAID Controller in Slot 1: Dell PERC H750 Adaptor Configuration Utility > Main Menu > ConfigurationManagement for the H750**. If there is no Dell PERC available for selection then the PERC card or its PCIe connection to the server motherboard is in an error condition. Go back to step 3 above and reseat the PERC card. If that does not correct the problem, the PERC card will need to be replaced. Refer to Replacing the PERC H730P on page 140 or Replacing the PERC H750 RAID Controller on page 142 in the next section for reference to the above steps.
7. Select **Virtual Disk Management** and view the Virtual Disk Status. Status should report as **Ready** if the virtual drive is functioning properly. If the virtual disk was recently created, it is possible the virtual disk could report as Initializing which is normal. Ensure RAID configuration matches ASP 130 server profile. See Avaya Solutions Platform Appliance profiles on page 12.
8. Select each Associated Physical Disk that is part of the Virtual Disk and view its properties.
9. All disks should report as **Online** and should be associated with the Virtual Disk of the ASP 130 Server. If a physical disk is not online and/or errored go to the *Hard Disk Drive* chapter and replace the failing disk according to procedures. If more than 1 (RAID5) or 2 (RAID6) drives needed to be replaced, then a new virtual drive should be created. Go to the *RAID Configuration* chapter to create the virtual drive after all physical disks have been repaired and report online.

   Note:

   If all physical disks are healthy, but the virtual disk is in error go to the *RAID Configuration* chapter and try to create the virtual disk for this ASP 130. If the virtual drive can not be created then the H730P/H750 Card should be replaced. Go to next section for replacement procedure.

   If the PERC H730P/H750 virtual disk and physical drives all report as healthy and online other potential causes for poor server performance should be investigated. Running system diagnostics described in the *Dell Embedded System Diagnostics* chapter should be considered or reviewing additional information reported by the iDRAC is suggested.

Replacing the PERC H730P RAID Controller

Before you begin

Ensure that you locate the following components on the system motherboard:

Refer to the label located on the inside of the server lid.

1. PERC H730P Controller
2. PERC H730P Controller cable connector (SAS Cables)

Caution:

Always practice safe electrostatic discharge procedures. For more information, see Electrostatic discharge safety on page 25.

Warning:

These steps are service impacting, conduct this activity during a customer approved maintenance window.

Procedure

1. Power down the server according to Avaya's application instructions and disconnect the system from the electrical outlet by removing both power cords.
2. Open the server lid and locate the PERC H730P card located in the rear of motherboard. See Figure 37: PERC H730P card location on page 139 or refer to the label of the server motherboard on inside of the server lid and refer to figure Figure 39: Removing and installing the PERC 9 mini monolithic card on page 142 below.
3. Disconnect the storage controller cable from the PERC H730P card connectors.
   a. Remove the two screws that secure the cable to the PERC card.
   b. Grasp the cable on both sides of the cable connector and pull the cable up and away from the PERC card.
4. Angle the PERC card so that the other end of the card disengages from the storage-controller card holder on the system motherboard.
5. Lift the PERC card up and out of the system.
6. With the replacement PERC H730P card, align one end of the card with the card holder on the system motherboard.
7. Lower the other end of the PERC card into the card holder on the system board.
8. Connect the storage controller cable to the PERC card.
   a. Grasp the cable on both sides of the cable connector and connect to the PERC card.
   b. Attach the two screws to secure the cable to the PERC card.
9. SAS data cables should be reused. No routing or connecting to the SAS disk drive backplane should be necessary. If SAS cables have been disconnected ensure SAS data cables are connected securely and correctly to the connectors on the PERC card. Route SAS data cables through the clip on the card and through the channel on the inner side of the chassis. Attach connector labeled “SAS A” to connector SAS A on the backplane. Perform the equivalent procedure for the SAS B connector.
10. If Raid battery is not installed in replacement PERC card remove from the failed PERC card and insert in the new replacement PERC card. See the *Raid Battery* chapter.

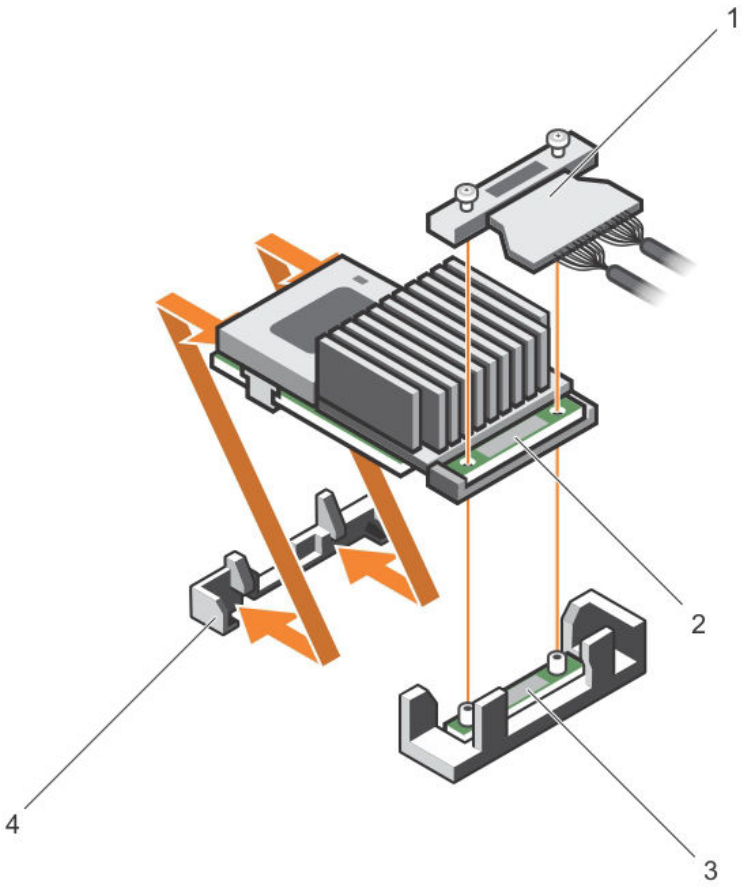


Figure 39: Removing and installing the PERC 9 mini monolithic card

1. Storage Controller Cable (SAS Cables)
2. Storage Controller Card
3. Storage Controller card holder
4. Storage Controller retention hook

Replacing the PERC H750 RAID Controller

Before you begin

Ensure that you locate the following components on the system motherboard. Refer to the label located on the inside of the server lid.

- PERC H750 Controller
- PERC H750 Controller cable connector (SAS Cables)

Caution:

Always practice safe electrostatic discharge procedures. For more information, see Electrostatic discharge safety on page 25.

Warning:

These steps are service impacting, conduct this activity during a customer approved maintenance window.

Procedure

1. Power down the server according to Avaya's application instructions and disconnect the system from the electrical outlet by removing both power cords.
2. Open the server lid and locate the PERC H750 card located in right rear (as viewed from the front) of the server installed in PCIe slot 1. See Figure 38: PERC H750 card location on page 139 for H750 location.
3. Refer to Figure 40: Disconnect SAS Cable from H750 connector on page 144 below. Disconnect the storage controller cable from the PERC H750 card connector.
4. Lift the PCIe Expansion riser out of the server (Figure 41: Remove the expansion riser 1B (2 CPU systems) on page 144; Figure 42: Remove expansion riser 1A (1 CPU systems with H730P or H750 RAID Controller) on page 144) using the blue touch points.
5. Turn over the Expansion Riser, open the blue card retainers and remove the PERC H750 card from the PCIe connector and place to the side. Refer to Figure 43: Turn over the expansion riser, open the blue card retainers and remove the bad H750 RAID controller on page 145.
6. Insert new/replacement PERC H750 card into the riser's PCIe connector. Ensure H750 PCIe connector is fully inserted into the Expansion riser's PCIe connector socket using connector keying and PCIe faceplate for alignment. Refer to Figure 44: Insert replacement H750 into riser's PCIe connector using connector key and faceplate to ensure card is aligned and inserted correctly. Close card retainers once H750 is fully inserted into riser connector on page 145.
7. After the new H750 has been fully seated into the riser, turn the riser over and insert it into the server motherboard connector. Refer to Figure 45: Turn riser over and reinsert expansion riser into the server motherboard connector using the connector guidepost. Firmly seat the riser into its connector and connect SAS cable to newly inserted H750 on page 146.
8. Connect the storage controller cable to the newly inserted H750's SAS connector. Place the server lid on, reconnect cables if applicable, and power up the server.
9. If the Raid battery is not installed in replacement PERC card remove the battery from the failed PERC card and insert in the new replacement PERC card. See Chapter 10 Raid Battery for additional information if needed.

Figure 40: Disconnect SAS Cable from H750 connector

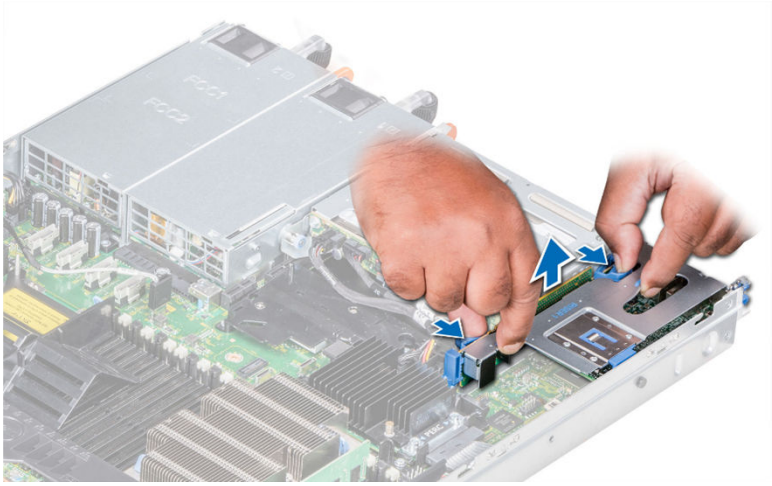


Figure 41: Remove the expansion riser 1B (2 CPU systems)

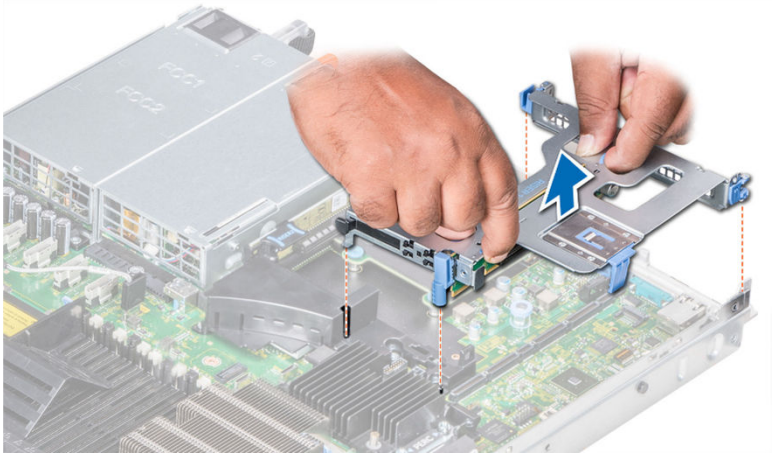


Figure 42: Remove expansion riser 1A (1 CPU systems with H730P or H750 RAID Controller)

Figure 43: Turn over the expansion riser, open the blue card retainers and remove the bad H750 RAID controller

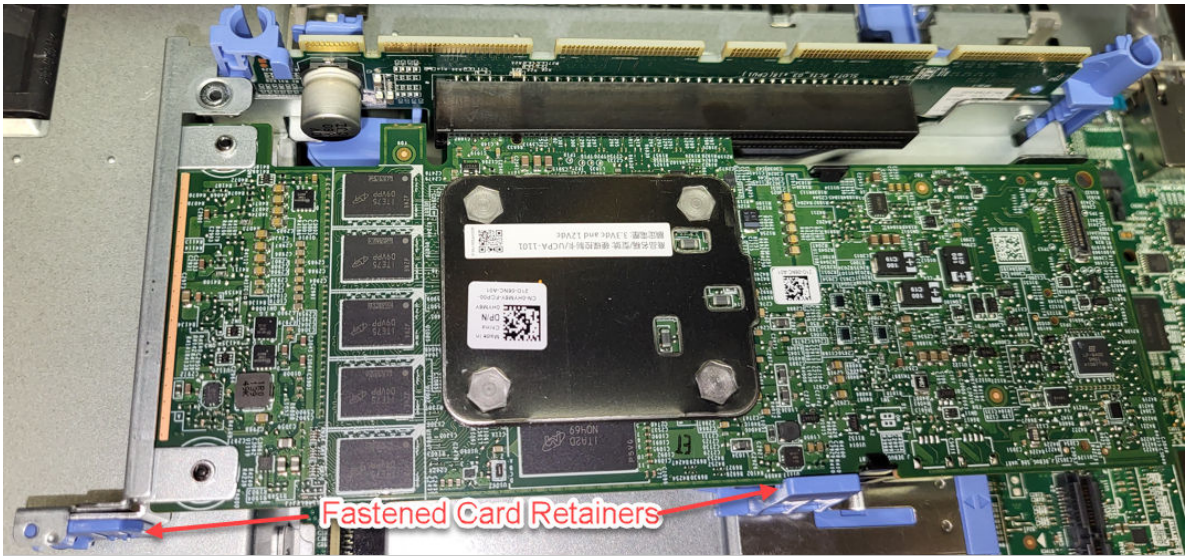


Figure 44: Insert replacement H750 into riser's PCIe connector using connector key and faceplate to ensure card is aligned and inserted correctly. Close card retainers once H750 is fully inserted into riser connector

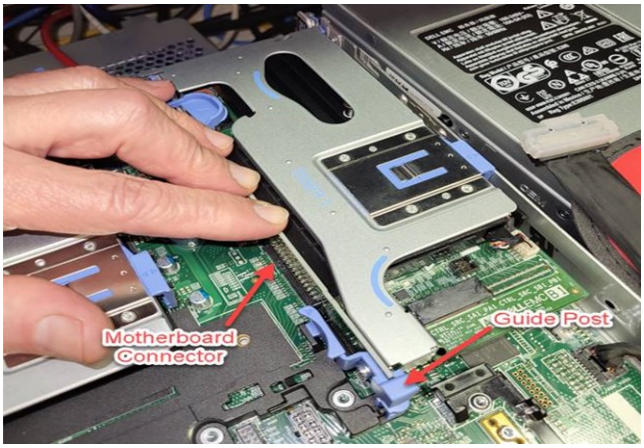


Figure 45: Turn riser over and reinsert expansion riser into the server motherboard connector using the connector guidepost. Firmly seat the riser into its connector and connect SAS cable to newly inserted H750

Chapter 25: R640 DVD-ROM problems

Note:

With the introduction of ASP R6.0.x, the DVD-ROM is no longer utilized for installation of ASP R6.0.x software. It is still used for BIOS/Firmware updates on the Dell R640.

DVD-ROM problems

Symptoms

- System does not boot from media.
- Data read from the drive is inconsistent, or drive cannot read data.
- Drive or media is not detected.

Troubleshooting a DVD-ROM drive

About this task

Follow the steps below to troubleshoot a DVD-ROM drive.

Warning:

To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.

Procedure

1. Try using a different CD or DVD. Be sure the inserted CD or DVD format is valid for the drive.
2. Ensure the drive boot order in BIOS is set so that the server boots from the DVD-ROM drive first. Avaya servers should be set to boot from DVD-ROM drive first.
3. Turn off the system and attached peripherals and disconnect the system from the electrical outlet. Shutdown application according to Avaya's procedure.
4. Remove the lid of the system.
5. Ensure that the interface cable is securely connected to the optical drive and to the controller.
6. Ensure that a power cable is properly connected to the drive.

7. Close the system.
8. Power up system and try to boot from known good bootable media.
9. Connect a monitor, USB keyboard, and mouse to Dell 640 Server, and do the following:
    a. Reboot server. From the Dell splash screen, press `F10` to go to **Lifecycle Controller**, and run the diagnostics from the console.
    b. Select **Hardware Diagnostics** > **Run Diagnostics** and navigate to applicable tests for diagnosis. DVD media may be required to test the DVD-ROM drive.

Next steps

If the part is defective, continue with the removal and replacement procedures.

Removing optical drive

About this task

Use this procedure to remove optical drive from the system.

Before you begin

- Perform a graceful shutdown of every Avaya application running on the server, then, turn off the system, including any attached peripherals.
- Disconnect the system from the electrical outlet and disconnect the peripherals.
- If applicable, remove the system from the rack.
- Open server lid and disconnect the power/data cable from the connector on the optical drive. See illustration below.

Note:

Ensure that you note the routing of the power and data cable on the side of the system as you remove them from the system board and drive. Route these cables properly when you replace them to prevent them from being pinched or crimped.

Procedure

1. Press the release tab to release the optical drive.
2. Slide the optical drive out of the system until it is free of the optical drive slot.
3. If you are not adding a new optical drive, install the optical drive blank. The procedure to install the optical drive blank is the same as the optical drive.

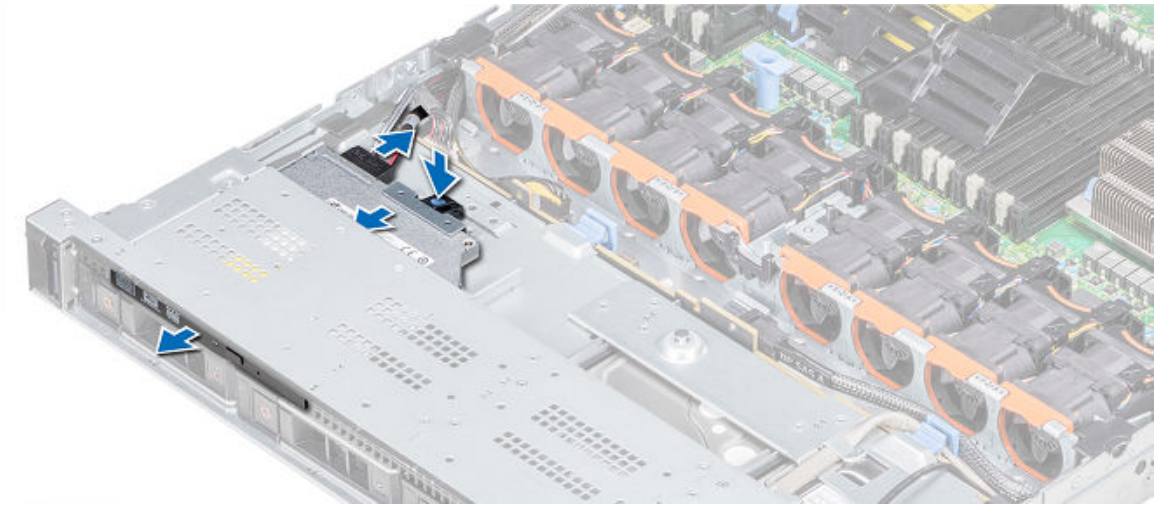


Figure 46: Optical drive removal

Installing the optical drive

About this task

Use this procedure to install the optical drive.

Procedure

1. Align the optical drive with the optical drive slot on the front of the system.
2. Slide in the optical drive until the release tab snaps into place.

Figure 47: Optical drive insertion

3. Connect the power/data cable to the connector on the optical drive and the connector on the system board.

   Route the cables properly on the side of the system to prevent it from being pinched or crimped.
4. System is now ready to be powered on.

Chapter 26: Dell R640 FRU replacement

Overview

This section describes how to replace a failed Avaya Solutions Platform (ASP) 130 Dell R640 server in the field.

An ASP 130 server Field Replaceable Unit (FRU) comes with the system (BIOS) settings preconfigured and base level firmware installed.

A server FRU is used for maintenance repair only. The Dell R640 server FRU contains a subset of the components of the server it is replacing. The onsite engineer will need to remove parts from the failed server and install them in the server FRU to match the configuration of the server being replaced. The FRU server will come prepopulated with the same number of CPUs and the same CPU type as the server that is being replaced. One DIMM is prepopulated/CPU, 1 HDD and 1 power supply is populated in the FRU server along with 6 NICs, iDRAC Express and 5(1CPU) or 8(2CPU) fans. See the following table for FRU codes and FRU components. Check the labels on the failed server to ensure the correct replacement server FRU is ordered.

Note:

For more information on importing drives from a failed server, see *Chapter 32: Dell R660xs and R640 RAID Import Procedures*.

Refer to the following table to verify that the Bare Bones server FRU has the correct comcode for the ASP Profile it is intended to replace.

ASP 130 Server to be Replaced	Replacement Bare Bones FRU Server Code
Skylake Profile 2 - Base server: 700514164*	Skylake Bare Bones Server (FRU) ACP DELL SERVER PROFILE 2 FRU - Avaya PN: 700514160
Skylake Profile 3 - Base Server: 700514165*	Skylake Bare Bones Server (FRU) ACP DELL SERVER PROFILE 3 FRU - Avaya PN: 700514161
Skylake Profile 4 - Base Server: 700514166*	Skylake Bare Bones Server (FRU) ACP DELL SERVER PROFILE 4 FRU - Avaya PN: 700514162
Skylake Profile 5 - Base Server: 700514167*	Skylake Bare Bones Server (FRU) ACP DELL SERVER PROFILE 5 FRU - Avaya PN: 700514163
Skylake Profile 51 - Base Server: 700514167*	Skylake Bare Bones Server (FRU) ACP DELL SERVER PROFILE 51 FRU - Avaya PN: 700514163

Table continues…

ASP 130 Server to be Replaced	Replacement Bare Bones FRU Server Code
ASP DELL R640 CL BASE SERVER P2: 700515522 With H730 and Intel 4x1GbE NDC	ASP DELL R640 CL FRU SRVR P2 700515665
ASP DELL R640 CL BASE SERVER P3: 700515523 With H730 and Intel 4x1GbE NDC	ASP DELL R640 CL FRU SRVR P3 700515666
ASP DELL R640 CL BASE SERVER P4: 700515524 With H730 and Intel 4x1GbE NDC	ASP DELL R640 CL FRU SRVR P4 700515667
ASP DELL R640 CL BASE SERVER P5: 700515525 With H730 and Intel 4x1GbE NDC	ASP DELL R640 CL FRU SRVR P5 700515668
ASP DELL R640 CLv2 BASE SERVER P2: 700516315 With H750 and Broadcom 4x1GbE NDC	ASP DELL R640 CLv2 FRU SRVR P2 700516323
ASP DELL R640 CLv2 BASE SERVER P3: 700516316 With H750 and Broadcom 4x1GbE NDC	ASP DELL R640 CLv2 FRU SRVR P3 700516324
ASP DELL R640 CLv2 BASE SERVER P4: 700516317 With H750 and Broadcom 4x1GbE NDC	ASP DELL R640 CLv2 FRU SRVR P4 700516325
ASP DELL R640 CLv2 BASE SERVER P5: 700516318 With H750 and Broadcom 4x1GbE NDC	ASP DELL R640 CLv2 FRU SRVR P5 700516326

* Initial release of Skylake servers shipped with a label stating **REPLACEMENT SERVER** and then transitioned to label stating **BARE METAL SERVER**.

Note:

An ASP 130 Profile 51 failed server will be rebuilt from the Profile 5 Bare Bones Server FRU by adding an additional 2 x 600 GB HDDs.

Table 12: FRU Server Configuration table:

FRU Construct	Profile 2	Profile 3	Profile 4	Profile 5	Comments
Skylake Bare Bones Server (FRU)	700514160	700514161	700514162	700514163	
Intel Skylake CPU	S-4114		G-6132		Avaya does not replace CPUs. Order a new server FRU if CPU has failed.
Number of CPUs	1	2	1	2	
Cascade Lake Bare Bones Server (FRU)	700515665	700515666	700515667	700515668	Cascade Lake server FRU with H730P and 1GB Quad Pt Intel NDC

Table continues…

FRU Construct	Profile 2	Profile 3	Profile 4	Profile 5	Comments
Cascade Lake v2 Bare Bones Server (FRU)	700516323	700516324	700516325	700516326	Cascade Lake server FRU with H750 and 1GB Quad Pt Broadcom NDC
Intel Cascade Lake	S-4210		G-6226R		Avaya does not replace CPUs. Order a new server FRU if CPU has failed.
Number of CPUs	1	2	1	2	# of physical CPUs installed in motherboard sockets
Server Model	Dell R640XL 1U server				FRU codes
Intel Skylake CPU	S-4114		G-6132		—
Intel Cascade Lake CPU	S-4210		G-6226R		
Number of CPUs	1	2	1	2	
Number of 8GB RDIMMS	1	2	—	—	700514187 ASP Dell 8GB MEMORY MODULE FRU
Number of 16 GB RDIMMS	—	—	1	2	700514188 ASP Dell 16GB MEMORY MODULE FRU
Number of 600 GB HDDs 2.5 inch 10K	1	1	1	1	700514178 ASP Dell 600GB 10k SAS 2.5 INCH HDD FRU
Fans	5	8	5	8	700514177 ASP DELL CHASIS FAN FRU
DVD ROM	Included				700514183 ASP DELL DVD DRIVE W/BRKT FRU
1GB Quad Pt NIC Intel NDC Comes in Skylake and Cascade Lake Server with H730P RAID controller	1	1	1	1	700514180 ASP DELL 1GB QUAD PT NIC FRU

Table continues…

FRU Construct	Profile 2	Profile 3	Profile 4	Profile 5	Comments
1GB Quad Pt Broadcom NDC Comes in Cascade Lake v2 Server with H750 RAID controller	1	1	1	1	700516329 ASP DELL R640 CLv2 1GB Broadcom QUAD PORT NDC FRU
1GB Dual Pt NIC Comes in Skylake and Cascade Lake Server with H730P RAID controller. **Note:** Also comes in Cascade Lake v2 Single CPU Server with H750 RAID controller	1 See Cascade Lake v2 Note.	1	1 See Cascade Lake v2 Note.	1	700514181 ASP DELL 1GB DUAL PT NIC FRU – Half height faceplate
1GB Dual Pt NIC Comes in Cascade Lake v2 Dual CPU Server with H750 RAID controller	N/A	1	N/A	1	700516330 ASP DELL R640 1GB DUAL PT NIC – FULL HEIGHT FACE PLATE FRU
H730P Raid Card Comes in Skylake and Cascade Lake Server with 1GB Quad Pt Intel NDC	2GB cache				700514184 ASP DELL RAID CARD FRU
H750 Raid Card Comes in Cascade Lake v2 Server with 1GB Quad Pt Broadcom NDC	8GB cache				700516327 ASP DELL R640 CLv2 H750 RAID CARD FRU
H730P RAID Controller Battery Comes in Skylake and Cascade Lake Server with 1GB Quad Pt Intel NDC	H730P RAID Controller Battery				700514186 ASP DELL RAID BATTERY FRU

Table continues…

FRU Construct	Profile 2	Profile 3	Profile 4	Profile 5	Comments
H750 RAID Controller Battery Comes in Cascade Lake v2 Server with 1GB Quad Pt Broadcom NDC	H750 RAID Controller Battery is included in the RAID controller only. It cannot be ordered separately.				The H750 RAID battery is not a separate orderable entity. In the event of a failure of the RAID Battery, the RAID Card will need to be ordered for replacement.
Raid Setting	Unconfigured except for auto import enabled **Note:** Avaya is assessing the feasibility of importing Hard Disk Drives (HDDs) for a future release. Currently, importing drives from a failed server is not supported.				—
OOB Management	iDRAC Express - Factory Gen PW				—
Power Supplies	Single 750 W				700514176 ASP DELL 750W AC PSU FRU
Rail kit	Included				—

Note:

An ASP 130 Profile 51 failed server will be rebuilt from the Profile 5 Bare Bones Server FRU by adding an additional 2x600GB HDDs.

Note:

The Dell RAID battery is a consumable item and therefore is considered a customer replaceable unit (CRU). The RAID battery is not covered under the maintenance agreement.

The H750 RAID battery is not a separate orderable entity. In the event of a failure of the RAID Battery, the RAID Card will need to be ordered for replacement.

Note:

The ASBCE ASP 110 P5 2x10Gb NIC will need to be removed from the existing (failed) server and placed in the Server FRU 2x1Gb NIC slot.

Prerequisites

Before you begin, ensure that the following items are available:

1. All additional FRU components required for the replacement procedure have been procured and are accessible. These components should be ordered or acquired from the server being replaced.

2. Customer-provided VGA monitor, USB keyboard, and mouse for BIOS/FW update and to enable and configure the iDRAC.
3. Capture ALL ASP R6.0.x Host IP and naming information (host name, domain, NTP, DNS, etc.).
4. Reference individual application documentation for details on backup procedures as well as required configuration details that must be captured. Ensure current application level backups are moved off of the ASP server.
5. Dell R640 BIOS/FW v16 or later and/or Dell R660xs BIOS/FW v3 or later. See *PSN027112u* or *PSN027114u*.
6. Correct version of ASP R6.0.x media.
7. Application VM OVAs and service packs and or patches (check for latest PCNs, PSNs, Release Notes).
8. Review the ASP 130 documentation below for Rebuilding the ASP 130 Server.
    a. *PSN027112u* or *PSN027114u* Dell R640 v16 (or latest available) or Dell R660xs v3 (or latest available).
    b. Reference PCN2173S Avaya Solutions Platform 130 R6.0.x.
    c. Installing the Avaya Solutions Platform 130 Series R6.0.x.
    d. *Avaya Solutions Platform 130 Series iDRAC9 Best Practices*.
    e. Application specific deployment guides.

Procedures

Procedure

1. Ensure that all VMs are gracefully shutdown first.
2. Follow standard procedures to gracefully shutdown the host.
3. Ensure that the system is completely shutdown and the server is powered OFF.

   This means that the applications, operating system, and server are all properly shutdown.
4. After the server to be replaced is completely powered down, remove the power cords from the server.

   Electrostatic alert:

   ESD can damage electric circuits. Do not touch electric hardware unless you wear a grounding wrist strap or other static-dissipating device.
5. Highly recommended, set the failed and the FRU server side by side Powered OFF (cords disconnected) and remove server lids. Ensure number of CPUs match between the two servers.
6. Move known good memory DIMMs from the failed server to FRU server to the corresponding slot positions. See table below.

Add in any replacement FRU memory if applicable. See inside lid for DIMM socket locations.

Note:

Ensure prepopulated memory DIMM(s) in FRU server is the same memory size moved from failed server. If not replace prepopulated DIMM(s) with all the DIMM(s) from failed server.

Profile	Slots Populated	DIMM Size	Total Memory
2	A1, A2, A3	8GB	24GB
3	A1, A2, A3, B1, B2, B3	8GB	48GB
4	A1, A2, A3, A4, A5, A6	16GB	96GB
5	A1, A2, A3, A4, A5, A6, B1, B2, B3, B4, B5, B6	16GB	192GB

7. Move power supply from the failed server to the FRU unit.

Chapter 27: R640 RAID Configuration

Reference the RAID Configuration section of the Installing the Avaya Solutions Platform 130 Series R6.0.x guide.

Chapter 28: Dell R660xs and R640 Embedded System Diagnostics

Dell Embedded System Diagnostics

If you face any issue with your system the user has the option to run the system diagnostics to test the system hardware without using additional equipment or risking data loss.

The Embedded System Diagnostics provides options for particular device groups or devices to:

- Run tests automatically or in an interactive mode.
- Repeat tests.
- Display or save test results.
- Run thorough tests to introduce additional test options to provide extra information about the failed devices.
- View status messages that inform you if tests are completed successfully.
- View error messages that inform you of problems encountered during testing.

Running system diagnostics from Boot Manager

About this task

Use this procedure to run system diagnostics from Boot Manager.

Procedure

1. Connect a monitor, USB keyboard, and mouse to Dell 640 or 660xs Server.
2. Gracefully shutdown every Avaya application running on the server.
3. Reboot server.
4. Press `F11` when your system is rebooting.
5. Using up and down arrow keys, select **System Utilities** > **Launch Diagnostics**.

   The diagnostics starts running the tests on all the detected devices.

   The user can abort the testing to select specific component testing by pressing `ESC` and then selecting `+` and following on screen directions and options.

Chapter 29: Avaya Solutions Platform 130 R660xs and R640 component MIBs and OIDs

Avaya Solutions Platform 130 component MIBs and OIDs

The following links contain the MIBs and OIDs provided by vendors for using third-party monitoring tools:

SNMP Reference Guide for iDRAC and Chassis Management Controller

Dell R640:

- Dell OpenManage MIBs for PowerEdge, v11.1.0.0 | Driver Details | Dell US

Dell R660xs:

- Dell OpenManage MIBs for PowerEdge, v11.0.1.0 A01 | Driver Details | Dell US

Chapter 30: Dell R660xs and R640 Log and File Collection to Aid in Troubleshooting

Verifying the ASP configuration and network topology

Executing **`showConfig`** will provide detailed information on the following:

- System (server type, BIOS version)
- CPU
- Memory
- Disk
- Raid controller
- Power supply
- Network interfaces
- USB devices
- Software
- Updates installed in the system
- Network topology
- Network bridge topology
- Other network connections
- Virtual Machine IP addresses
- NTP configuration
- Performance profile
- Failed SystemD units
- Error message
- Crypto policy
- OS hardening

- Virtual Machines
- Virtual Machines without autostart
- Virtual Machines Storage Pools

Collecting KVM on RHEL logs

Reference the *Log and File Collection to Aid in Troubleshooting* chapter of the Installing the Avaya Solutions Platform 130 Series R6.0.x guide.

This will provide instructions on the following:

- Collecting Host level log information.
- Collecting a KVM on RHEL 8.10 SOS Report from the CLI.
- Collecting a KVM on RHEL 8.10 SOS Report from the Cockpit UI.
- Collecting an iDRAC Support Assist file.

Chapter 31: Dell R660xs and R640 perccli debugging commands (only available in ASP R6.0.0.1 and later)

Overview

The perccli commands documented in this chapter can be used to query/troubleshoot HDDs, RAID Controller and RAID Battery.

Caution:

Using the **perccli** commands shown will not affect server performance, but running **perccli** commands not specified by Avaya may corrupt the array and destroy system storage.

Troubleshooting the RAID controller (H730P, H750, H755)

About this task

Use **perccli** to troubleshoot the RAID controller.

Procedure

1. View the LCD and Status LED indicators for any Virtual or HDD error messages. Take note of any errors displayed.
2. Open an SSH session into the KVM on RHEL host and log in using the custadm credentials.
3. Change directory to `/opt/MegaRAID/perccli/`
4. Execute the command:

```
sudo ./perccli64 show
[sudo] password for custadm: [Enter Password for custadm account]
```

View the example output below:

Example: PERC H755 Adapter

```
[custadm@asp130-r660xs-a31-8HHD perccli]$ sudo ./perccli64 show
[sudo] password for custadm:
CLI Version = 007.2616.0000.0000 Dec 06, 2023
Operating system = Linux 4.18.0-553.34.1.el8_10.x86_64
Status Code = 0
Status = Success
Description = None

Number of Controllers = 1
Host Name = asp130-r660xs-a31-8HHD.acp.avaya.com
Operating System  = Linux 4.18.0-553.34.1.el8_10.x86_64

System Overview :
===============

-----------------------------------------------------------------------------
Ctl Model         Ports PDs DGs DNOpt VDs VNOpt BBU sPR DS EHS ASOs Hlth
-----------------------------------------------------------------------------
  0 PERCH755Front    16   8   1     0   1     0 Opt On  -  N      0 Opt
-----------------------------------------------------------------------------

Ctl=Controller Index|DGs=Drive groups|VDs=Virtual drives|Fld=Failed
PDs=Physical drives|DNOpt=Array NotOptimal|VNOpt=VD NotOptimal|Opt=Optimal
Msng=Missing|Dgd=Degraded|NdAtn=Need Attention|Unkwn=Unknown
sPR=Scheduled Patrol Read|DS=DimmerSwitch|EHS=Emergency Spare Drive
Y=Yes|N=No|ASOs=Advanced Software Options|BBU=Battery backup unit/CV
Hlth=Health|Safe=Safe-mode boot|CertProv-Certificate Provision mode
Chrg=Charging | MsngCbl=Cable Failure
```

Example: PERC H750 Adapter

```
System Overview :
===============

-----------------------------------------------------------------------------
Ctl Model           Ports PDs DGs DNOpt VDs VNOpt BBU sPR DS EHS ASOs Hlth
-----------------------------------------------------------------------------
  0 PERCH750Adapter     8   6   1     0   1     0 Opt On  -  N      0 Opt
-----------------------------------------------------------------------------
```

Output example: PERC H730P Mini Adapter

```
System Overview :
===============

-----------------------------------------------------------------------------
Ctl Model         Ports PDs DGs DNOpt VDs VNOpt BBU sPR DS EHS ASOs Hlth
-----------------------------------------------------------------------------
  0 PERCH730PMini     8   6   1     0   1     0 Opt On  3  N      0 Opt
-----------------------------------------------------------------------------
```

5. The System Overview Section displays the Controller Model (PERC H730PMini /H750A / H755 Adapter) and other storage components/parameters comprising the Array. A key explaining the parameters is provided at the bottom of the output.
6. Execute the command **`./perccli64 /c0 show | more`**. Press the space bar to advance to the next page of the display output. View the TOPOLOGY table as shown in the example below.

   Be aware that the RAID Type and number of Hard Drives installed in a system will vary based on the ASP 130 Profile #. See section Avaya Solutions Platform Appliance profile

tables for the detailed RAID and Hard drive specifications. The State field should be optimal (Optl) for the first 2 rows and then all DRIVEs listed below should be online (Onln). If the State is not optimal or one or more of the drives is not online, then the user should debug and repair/replace the faulty component(s) if necessary.

Example: PERC H755 Adapter output of healthy array

```
TOPOLOGY :
========

-----------------------------------------------------------------------------
DG Arr Row EID:Slot DID Type  State BT       Size PDC  PI SED DS3  FSpace TR
-----------------------------------------------------------------------------
 0 -   -   -        -   RAID6 Optl  N    3.271 TB dflt N  N   dflt N      N
 0 0   -   -        -   RAID6 Optl  N    3.271 TB dflt N  N   dflt N      N
 0 0   0   252:0    9   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   1   252:1    10  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   2   252:2    11  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   3   252:3    6   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   4   252:4    15  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   5   252:5    16  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   6   252:6    18  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   7   252:7    19  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
-----------------------------------------------------------------------------
```

Example: PERC H750 Adapter output of healthy array. Enclosure ID 64 vs 32 for the H730PMini adapter & 252 for the H755 adapter. This is expected.

```
TOPOLOGY :
========

-----------------------------------------------------------------------------
DG Arr Row EID:Slot DID Type  State BT       Size PDC  PI SED DS3  FSpace TR
-----------------------------------------------------------------------------
 0 -   -   -        -   RAID6 Optl  N    2.180 TB dflt N  N   dflt N      N
 0 0   -   -        -   RAID6 Optl  N    2.180 TB dflt N  N   dflt N      N
 0 0   0   64:0     6   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   1   64:1     7   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   2   64:2     8   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   3   64:3     1   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   4   64:4     16  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   5   64:5     15  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
-----------------------------------------------------------------------------
```

Example: PERC H730P Mini Adapter output of healthy array

```
TOPOLOGY :
========

-----------------------------------------------------------------------------
DG Arr Row EID:Slot DID Type  State BT       Size PDC  PI SED DS3  FSpace TR
-----------------------------------------------------------------------------
 0 -   -   -        -   RAID6 Optl  N    2.180 TB dflt N  N   dflt N      N
 0 0   -   -        -   RAID6 Optl  N    2.180 TB dflt N  N   dflt N      N
 0 0   0   32:0     0   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   1   32:1     1   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   2   32:2     2   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   3   32:3     3   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   4   32:4     4   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   5   32:5     5   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
-----------------------------------------------------------------------------
```

Example: PERC H755 - Degraded Array Output

In this example below, the array is currently in a degraded state due to the absence of two hard disk drives (HDDs), which are marked as "Missing" (Msng). As a result, the array status is indicated as "Degraded" (Dgrd). The array will remain in this degraded state until the missing HDDs are successfully installed and the rebuild process is completed. Once the rebuild is successful, the array status will return to "Optimal" (Optl).

Note:

The values under Arr, Row, Type, and State will remain consistent across other supported PERC adapters, such as the H750 and H730P Mini.

```
TOPOLOGY :
========

-----------------------------------------------------------------------------
DG Arr Row EID:Slot DID Type  State BT       Size PDC  PI SED DS3  FSpace TR
-----------------------------------------------------------------------------
 0 -   -   -        -   RAID6 Dgrd  N    3.271 TB dflt N  N   dflt N      N
 0 0   -   -        -   RAID6 Dgrd  N    3.271 TB dflt N  N   dflt N      N
 0 0   0   -        -   DRIVE Msng  -  558.375 GB -    -  -   -    -      N
 0 0   1   252:1    10  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   2   -        -   DRIVE Msng  -  558.375 GB -    -  -   -    -      N
 0 0   3   252:3    6   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   4   252:4    15  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   5   252:5    16  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   6   252:6    18  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   7   252:7    19  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
-----------------------------------------------------------------------------

DG=Disk Group Index|Arr=Array Index|Row=Row Index|EID=Enclosure Device ID
DID=Device ID|Type=Drive or RAID Type|Onln=Online|Rbld=Rebuild|Optl=Optimal
Dgrd=Degraded|Pdgd=Partially degraded|Offln=Offline|BT=Background Task Active
PDC=PD Cache|PI=Protection Info|SED=Self Encrypting Drive|Frgn=Foreign
DS3=Dimmer Switch 3|dflt=Default|Msng=Missing|FSpace=Free Space Present
TR=Transport Ready

Missing Drives Count = 2

Missing Drives :
==============

---------------------
Array Row       Size
---------------------
    0   0 558.375 GB
    0   2 558.375 GB
---------------------
```

Example: PERC H730P Mini – Partially Degraded Array Output

In this scenario, the array is in a partially degraded state due to the absence of one hard disk drive (HDD), which is labeled as "Missing" (Msng). Consequently, the Disk Group (DG) is shown as "Partially Degraded" (Dgrd). Since a RAID 6 array can tolerate the failure of up to two hard disk drives (HDDs), it will continue to operate in this state until the missing HDD is replaced. The array will remain in this partially degraded state until the missing HDD is successfully installed and the rebuild process is completed. Once the rebuild is successful, the array status will return to "Optimal" (Optl).

Note:

The values under Arr, Row, Type, and State will remain consistent across other supported PERC adapters, such as the H755 and H750.

```
TOPOLOGY :
========

-----------------------------------------------------------------------------
DG Arr Row EID:Slot DID Type  State BT       Size PDC  PI SED DS3  FSpace TR
-----------------------------------------------------------------------------
 0 -   -   -        -   RAID6 Pdgd  N    2.180 TB dflt N  N   dflt N      N
 0 0   -   -        -   RAID6 Dgrd  N    2.180 TB dflt N  N   dflt N      N
 0 0   0   -        -   DRIVE Msng  -  558.375 GB -    -  -   -    -      N
 0 0   1   32:1     1   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   2   32:2     2   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   3   32:3     3   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   4   32:4     4   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   5   32:5     5   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
-----------------------------------------------------------------------------

DG=Disk Group Index|Arr=Array Index|Row=Row Index|EID=Enclosure Device ID
DID=Device ID|Type=Drive or RAID Type|Onln=Online|Rbld=Rebuild|Optl=Optimal
Dgrd=Degraded|Pdgd=Partially degraded|Offln=Offline|BT=Background Task Active
PDC=PD Cache|PI=Protection Info|SED=Self Encrypting Drive|Frgn=Foreign
DS3=Dimmer Switch 3|dflt=Default|Msng=Missing|FSpace=Free Space Present
TR=Transport Ready

Missing Drives Count = 1

Missing Drives :
==============

---------------------
Array Row       Size
---------------------
    0   0 558.375 GB
---------------------
```

Example: PERC H755 Adapter – Rebuilding Array Output

In this example, two HDDs are rebuilding (Rbld) and therefore the Array is degraded (Dgrd). Once the HDDs successfully rebuild, the Array State should return to optimal (Optl) and all HDDs should go to online (Onln) status.

```
TOPOLOGY :
========

-----------------------------------------------------------------------------
DG Arr Row EID:Slot DID Type  State BT       Size PDC  PI SED DS3  FSpace TR
-----------------------------------------------------------------------------
 0 -   -   -        -   RAID6 Dgrd  N    3.271 TB dflt N  N   dflt N      N
 0 0   -   -        -   RAID6 Dgrd  N    3.271 TB dflt N  N   dflt N      N
 0 0   0   252:0    9   DRIVE Rbld  Y  558.375 GB dflt N  N   dflt -      N
 0 0   1   252:1    10  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   2   252:2    11  DRIVE Rbld  Y  558.375 GB dflt N  N   dflt -      N
 0 0   3   252:3    6   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   4   252:4    15  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   5   252:5    16  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   6   252:6    18  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   7   252:7    19  DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
-----------------------------------------------------------------------------
```

Example: PERC H730P Mini Adapter – Rebuilding Array Output

In this example, one hard disk drive (HDD) is in the process of rebuilding (Rbld), which results in the array being marked as "Degraded" (Dgrd). However, the Disk Group (DG) is only "Partially Degraded" (Pdgd), as a RAID 6 array can tolerate the failure of up to two HDDs and remain operational. Once the rebuild is successfully completed, the array status will return to "Optimal" (Optl), and all HDDs will be marked as "Online" (Onln).

Note:

The values under Arr, Row, Type, and State will remain consistent across other supported PERC adapters, such as the H755 and H750.

```
TOPOLOGY :
========

-----------------------------------------------------------------------------
DG Arr Row EID:Slot DID Type  State BT       Size PDC  PI SED DS3  FSpace TR
-----------------------------------------------------------------------------
 0 -   -   -        -   RAID6 Pdgd  N    2.180 TB dflt N  N   dflt N      N
 0 0   -   -        -   RAID6 Dgrd  N    2.180 TB dflt N  N   dflt N      N
 0 0   0   32:0     0   DRIVE Rbld  Y  558.375 GB dflt N  N   dflt -      N
 0 0   1   32:1     1   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   2   32:2     2   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   3   32:3     3   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   4   32:4     4   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
 0 0   5   32:5     5   DRIVE Onln  N  558.375 GB dflt N  N   dflt -      N
-----------------------------------------------------------------------------
```

7. Press the space bar to display the next page screen and view the VD LIST table. This output lists the Virtual drive information.

   Example: PERC H755/750 Adapter display of a healthy virtual drive (VD).

```
Virtual Drives = 1

VD LIST :
=======

------------------------------------------------------------
DG/VD TYPE  State Access Consist Cache Cac sCC     Size Name
------------------------------------------------------------
0/239 RAID6 Optl  RW     Yes     RWBD  -   OFF 3.271 TB VD0
------------------------------------------------------------

VD=Virtual Drive| DG=Drive Group|Rec=Recovery
Cac=CacheCade|OfLn=OffLine|Pdgd=Partially Degraded|Dgrd=Degraded
Optl=Optimal|dflt=Default|RO=Read Only|RW=Read Write|HD=Hidden|
TRANS=TransportReady
B=Blocked|Consist=Consistent|R=Read Ahead Always|NR=No Read Ahead|WB=WriteBack
AWB=Always WriteBack|WT=WriteThrough|C=Cached IO|D=Direct IO|sCC=Scheduled
Check Consistency

Physical Drives = 8
```

   Example: PERC H730PMini display of a healthy virtual drive (VD).

   Virtual Drive (VD) number is 0 for the H730P Mini Adapter vs 239 for the H755/H750 Adaptor. This is expected.

```
VD LIST :
=======
```

```
-------------------------------------------------------------
DG/VD TYPE  State Access Consist Cache Cac sCC     Size Name
-------------------------------------------------------------
0/0   RAID6 Optl  RW     Yes     RWBD  -   OFF 2.180 TB VD0
-------------------------------------------------------------

VD=Virtual Drive| DG=Drive Group|Rec=Recovery
Cac=CacheCade|OfLn=OffLine|Pdgd=Partially Degraded|Dgrd=Degraded
Optl=Optimal|dflt=Default|RO=Read Only|RW=Read Write|HD=Hidden|
TRANS=TransportReady
B=Blocked|Consist=Consistent|R=Read Ahead Always|NR=No Read Ahead|WB=WriteBack
AWB=Always WriteBack|WT=WriteThrough|C=Cached IO|D=Direct IO|sCC=Scheduled
Check Consistency

Physical Drives = 6
```

8. Scroll down to view the PD LIST table.

   Example: PERC H755 Adapter display of a healthy online (Onln) HDDs comprising Disk Group 0 (DG).

```
PD LIST :
=======

-------------------------------------------------------------------------------
EID:Slt DID State DG       Size Intf Med SED PI SeSz Model            Sp Type
-------------------------------------------------------------------------------
252:0     9 Onln   0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
252:1    10 Onln   0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
252:2    11 Onln   0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
252:3     6 Onln   0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
252:4    15 Onln   0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
252:5    16 Onln   0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
252:6    18 Onln   0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
252:7    19 Onln   0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
-------------------------------------------------------------------------------

EID=Enclosure Device ID|Slt=Slot No|DID=Device ID|DG=DriveGroup
DHS=Dedicated Hot Spare|UGood=Unconfigured Good|GHS=Global Hotspare
UBad=Unconfigured Bad|Sntze=Sanitize|Onln=Online|Offln=Offline|Intf=Interface
Med=Media Type|SED=Self Encryptive Drive|PI=PI Eligible
SeSz=Sector Size|Sp=Spun|U=Up|D=Down|T=Transition|F=Foreign
UGUnsp=UGood Unsupported|UGShld=UGood shielded|HSPShld=Hotspare shielded
CFShld=Configured shielded|Cpybck=CopyBack|CBShld=Copyback Shielded
UBUnsp=UBad Unsupported|Rbld=Rebuild

Enclosures = 1
```

   Example: PERC H750 Adapter display of a healthy online (Onln) HDDs comprising Disk Group 0 (DG).

```
PD LIST :
=======

-------------------------------------------------------------------------------
EID:Slt DID State DG       Size Intf Med SED PI SeSz Model            Sp Type
-------------------------------------------------------------------------------
64:0      6 Onln   0 558.375 GB SAS  HDD N   N  512B ST600MM0069      U  -
64:1      7 Onln   0 558.375 GB SAS  HDD N   N  512B ST600MM0069      U  -
64:2      8 Onln   0 558.375 GB SAS  HDD N   N  512B ST600MM0069      U  -
64:3      1 Onln   0 558.375 GB SAS  HDD N   N  512B ST600MM0069      U  -
64:4     16 Onln   0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
```

```
64:5     15 Onln    0 558.375 GB SAS  HDD N   N  512B BL600MM0069      U  -
-------------------------------------------------------------------------------
```

Example: PERC H730P Mini Adapter display of a healthy online (Onln) HDDs comprising Disk Group 0 (DG).

```
PD LIST :
=======

-------------------------------------------------------------------------------
EID:Slt DID State DG       Size Intf Med SED PI SeSz Model            Sp Type
-------------------------------------------------------------------------------
32:0      0 Onln    0 558.375 GB SAS  HDD N   N  512B AL15SEB060NY     U  -
32:1      1 Onln    0 558.375 GB SAS  HDD N   N  512B AL15SEB060NY     U  -
32:2      2 Onln    0 558.375 GB SAS  HDD N   N  512B AL15SEB060NY     U  -
32:3      3 Onln    0 558.375 GB SAS  HDD N   N  512B AL15SEB060NY     U  -
32:4      4 Onln    0 558.375 GB SAS  HDD N   N  512B AL15SEB060NY     U  -
32:5      5 Onln    0 558.375 GB SAS  HDD N   N  512B AL15SEB060NY     U  -
-------------------------------------------------------------------------------
```

Checking RAID battery health using perccli commands

About this task

Use this procedure to check RAID battery health using perccli commands.

Procedure

1. View the LCD and Status LED indicators for any Virtual or HDD error messages. Take note of any errors displayed.
2. Open an SSH session into the KVM on RHEL host and log in using the custadm credentials.
3. Change directory to `/opt/MegaRAID/perccli/`.
4. Execute the command:

```
sudo ./perccli64 /c0/bbu show status | more
[sudo] password for custadm: [Enter Password for custadm account]
```

PERC H755 Adapter example output

```
[custadm@asp130-r660xs-a31-8HHD perccli]$ sudo ./perccli64 /c0/bbu show status |
more
[sudo] password for custadm:
CLI Version = 007.2616.0000.0000 Dec 06, 2023
Operating system = Linux 4.18.0-553.34.1.el8_10.x86_64
Controller = 0
Status = Success
Description = None

BBU_Info :
========

-----------------------
Property      Value
-----------------------
Type          BBU
```

```
Voltage       3932 mV
Current       0 mA
Temperature   21 C
Battery State Optimal
----------------------
```

5. View BBU_Info and verify that the Battery State is Optimal.
6. Press the space bar, if necessary, to view the next section displaying information about the GasGaugeStatus. Refer to output screen below. Verify that the Remaining Capacity and Full Charge Capacities of the battery are both greater than 200 mAh.
7. For either the H755/H750 H730P or RAID controller, ensure that the Battery State is optimal and that the RAID battery has a minimum capacity of 200 mAh for both Full Charge Capacity and Remaining Capacity. If either value falls below 200 mAh, replace the battery as soon as possible. When the battery charge drops to 135 mAh, the RAID cache will switch to "write-through" mode. In this mode, server disk writes will be governed by disk drive speeds, which can significantly degrade system performance.

```
GasGaugeStatus :
===============
-------------------------------------
Property                    Value
-------------------------------------
GasGauge StatusCode         0x38
Fully Discharged            N/A
Fully Charged               N/A
Discharging                 N/A
Initialized                 N/A
Remaining Time Alarm        N/A
Terminate Discharge Alarm   N/A
Over Temperature            N/A
Charging Terminated         N/A
Over Charged                N/A
Relative State of Charge    100%
Charger System State        Off
Remaining Capacity          467
Full Charge Capacity        467
Is SOH Good                 Yes
Battery backup charge time  0 hour(s)
-------------------------------------
```

Chapter 32: Dell R660xs and R640 RAID import procedures

Importing HDDs from a failed server

About this task

If the user is attempting an HDD import from the failed server's HDDs follow these steps below. If a RAID configuration is required and an import is not possible, continue to the *RAID configuration* chapter.

This procedure applies to both the R640 and R660xs. Import allows for a faster recovery of a server. The assumption is that the HDDs from the failed server are good. If the HDDs are good, then an import is possible.

Note:

Screenshots used in this procedure are for illustration purposes only.

Procedure

1. With power cords still removed on both systems, remove all the HDDs from the FRU server and set them aside. All HDDs from the FRU server must be removed before proceeding with the import process. The HDDs that have been removed from the FRU server will not be needed assuming all HDDs from the failed server are still operational.
2. Remove the HDDs one at a time from the failed server and insert them into the corresponding slot on the FRU server.
3. Once all HDDs have been moved to the FRU server, confirm that the new FRU server is the identical hardware construct as the failed server that it is replacing.
4. Once FRU server hardware configuration is confirmed to match the failed server, install back into rack position.
5. Connect all other media connections to the server (NIC cables to same NIC ports of the previous failed server).
6. Connect video monitor, USB keyboard, and mouse to server.
7. Insert power cords into the replacement server.
8. Press the power button located at the front right corner of the server and view the monitor screen. This is referred to as the server console.

If the RAID import is successful, the metadata resident on the HDDs should configure the replacement RAID controller to match the previous RAID controller that the HDDs were connected to. The server should progress through the boot up process and load the operating system.

9. When the server powers up the hardware boot screen displays (below). It does not indicate that the import was successful. Continue watching the monitor as the server attempts to boot from the newly inserted HDDs.

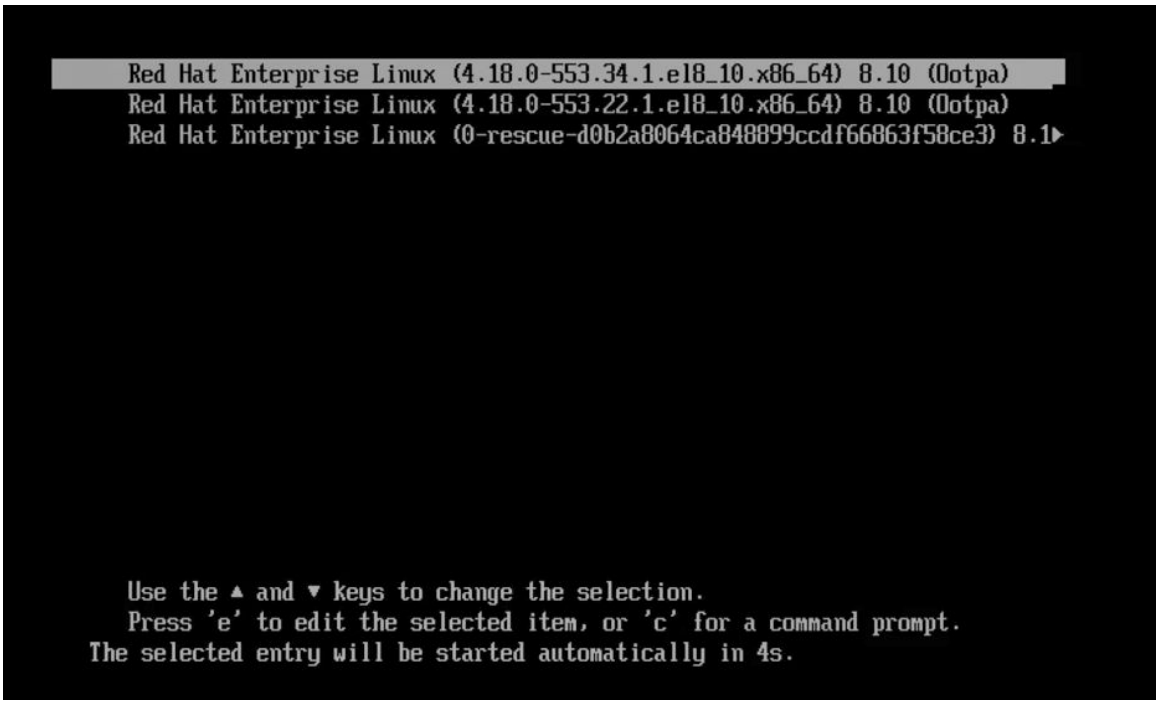
   Note:

   The BIOS version varies depending on the server hardware type (for example, R660xs vs. R640).

10. The following screen appears as the server attempts to boot from Red Hat Enterprise Linux for the first time. It is possible that the message `Boot Failed` may be displayed. The server will continue to attempt to boot. This message may appear again. No manual intervention is required. Allow the server to continue to boot. During this period, the system may pause for several seconds. This behavior is expected, as the server is in the process

of importing the RAID configuration and associated data from the foreign hard drives (HDDs).

11. Once the import process is complete, seeing the following screen is a good indication that the RAID configuration, along with all its data, was successfully imported. At this point, the RAID controller has assumed the RAID configuration from the failed server. Continue to allow the system to boot from its default highlighted OS selection.



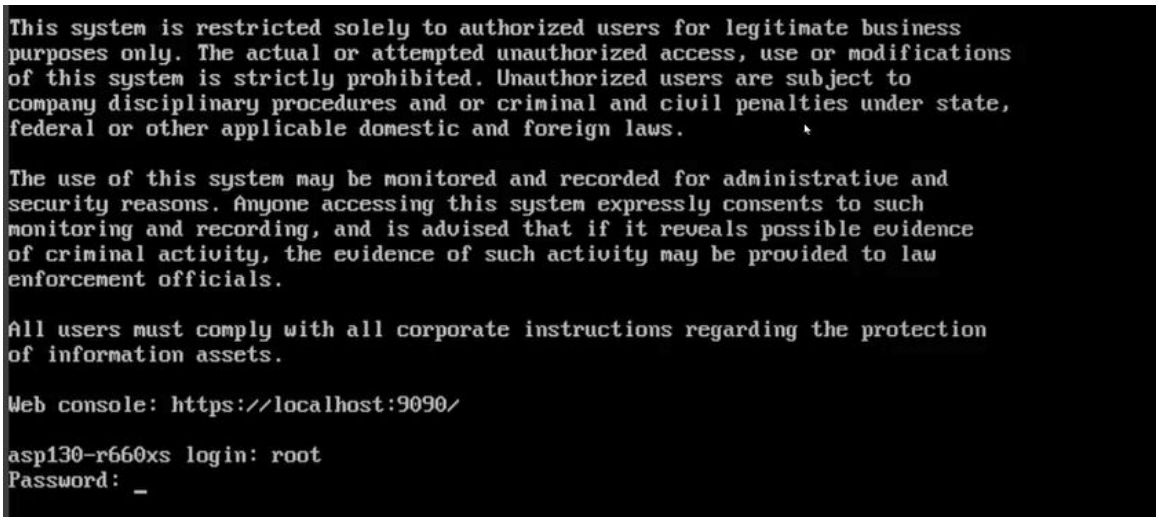
12. If the screen shown below appears, it indicates that KVM on Red Hat Enterprise Linux 8.10 has successfully booted on the server. This indicates that the RAID import was successful and that the data on the hard drives (HDDs) remains intact. At this stage, the RAID controller has correctly adopted the RAID configuration from the failed server.

    The next step is for the user to log in to the Cockpit host interface and verify the following:

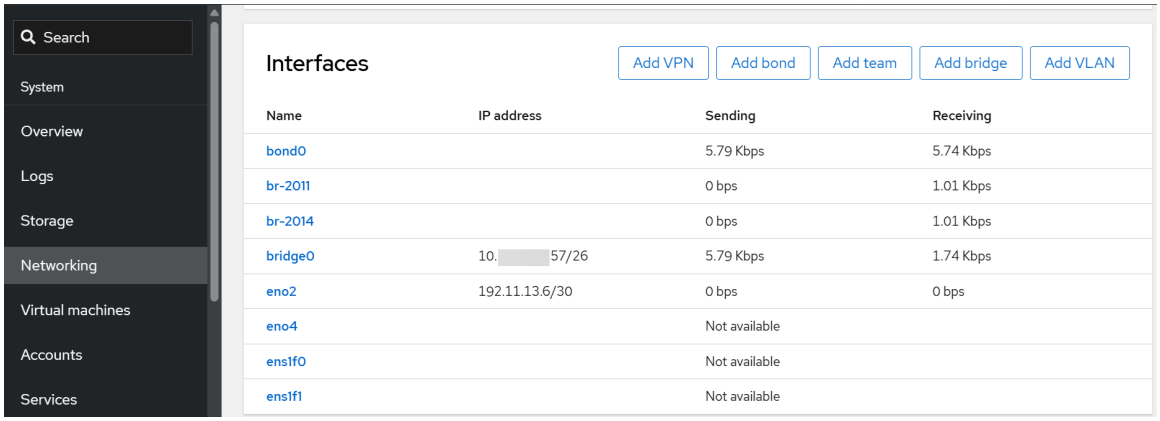
    a. Host networking configuration was not altered during the import process.

b. Validate virtual machines are present. Power on VMs as required if the AutoStart feature has not been set.

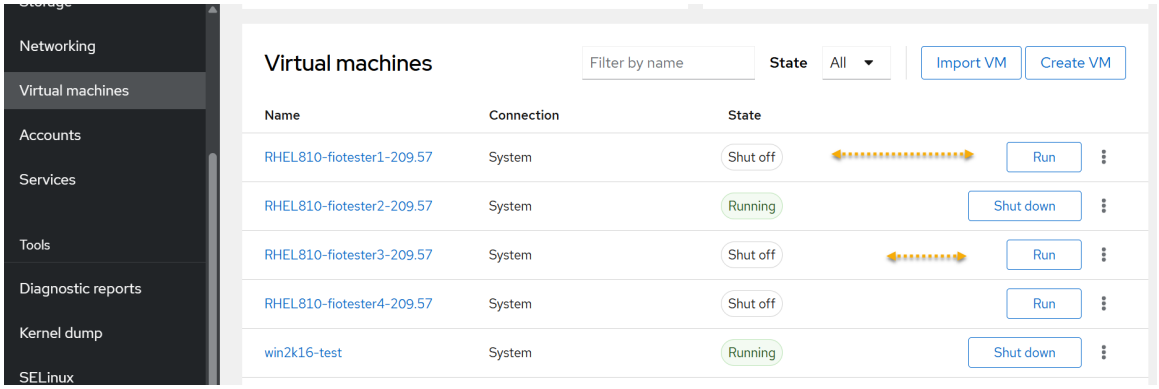
Move on to step 13 below. If the screen below does not appear, proceed to Step 14 to retry the import procedure.



13. Verify Host configuration was not altered during import of the HDDs.
    a. Log in to cockpit using the Host services port connection and authenticate with existing `custadm` credentials.
    b. Navigate to the Networking page and validate every expected interface is being displayed, such as bridge, bond, and VLAN tags.



c. Navigate to the Virtual machines page, and validate that you can see all expected virtual machines. Power on virtual machines on demand as required if AutoStart feature has not been set.



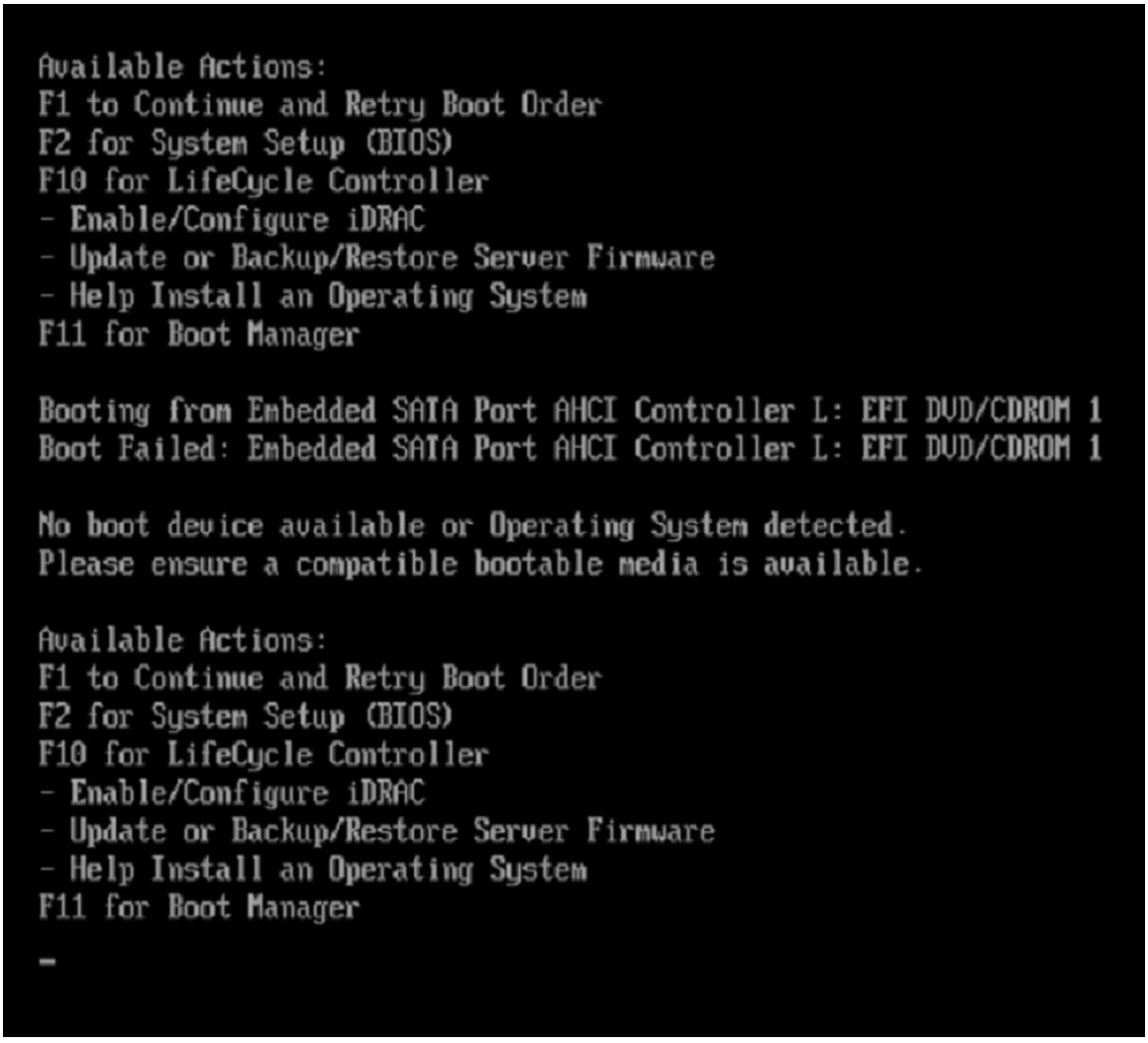
14. After Host network configuration and virtual machine verification, the RAID controller battery that came in the FRU server should have its health checked as outlined below in steps a – c. Refer to the RAID Battery chapter for additional information.

    a. Verify Raid battery is good by executing step: Checking the RAID battery health using system setup menu on page 61. If RAID battery health is good, then import task is complete.

    b. If the RAID battery requires replacement move the RAID battery from failed server to the replacement FRU server and recheck battery health. If battery health is good, import task is complete.

    c. If the RAID battery requires replacement, then a new RAID battery will need to be procured. Go to section RAID Battery ordering information on page 133.

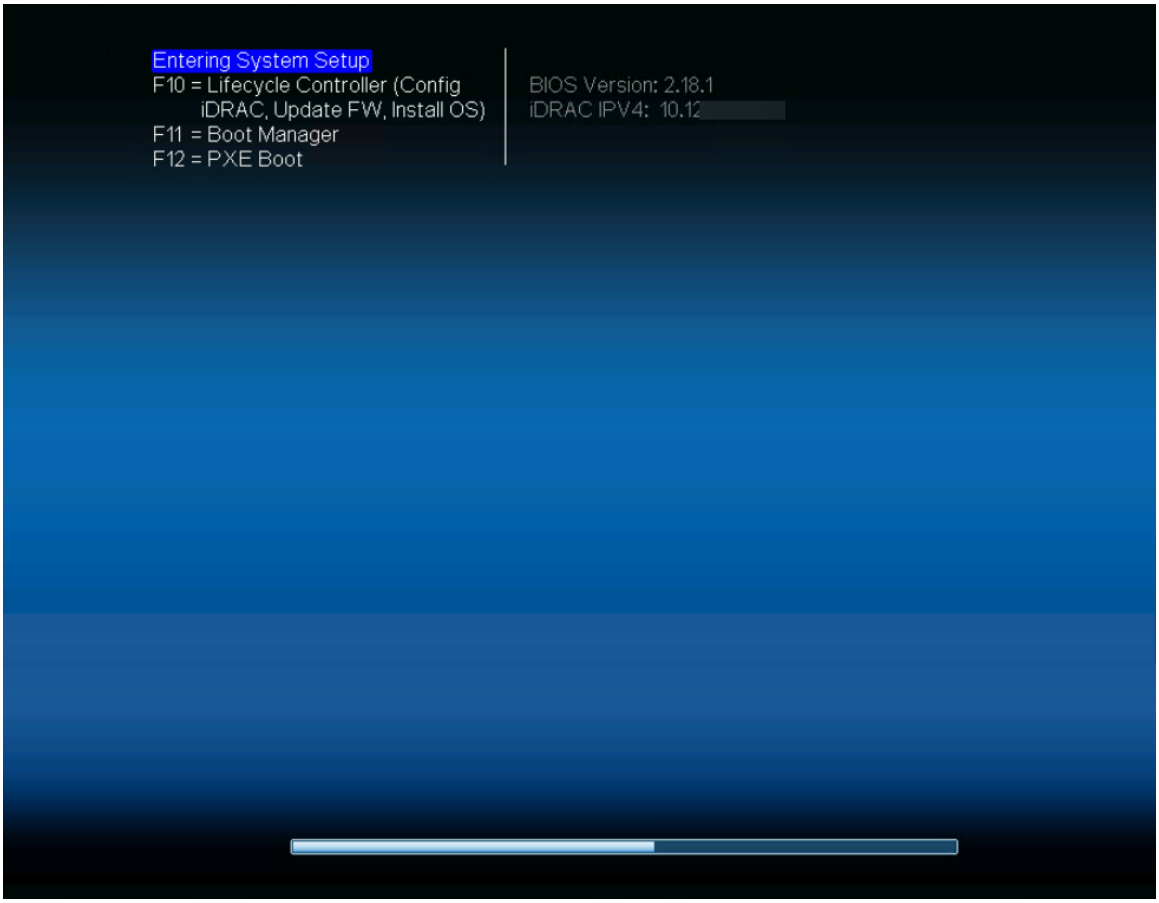
15. If the screen below appears then ASP 130 R6.0.x (KVM on RHEL 8.10) did not load, a RAID configuration setting should be verified. Select **F2** to enter System Setup.



RAID Import Verification Setting

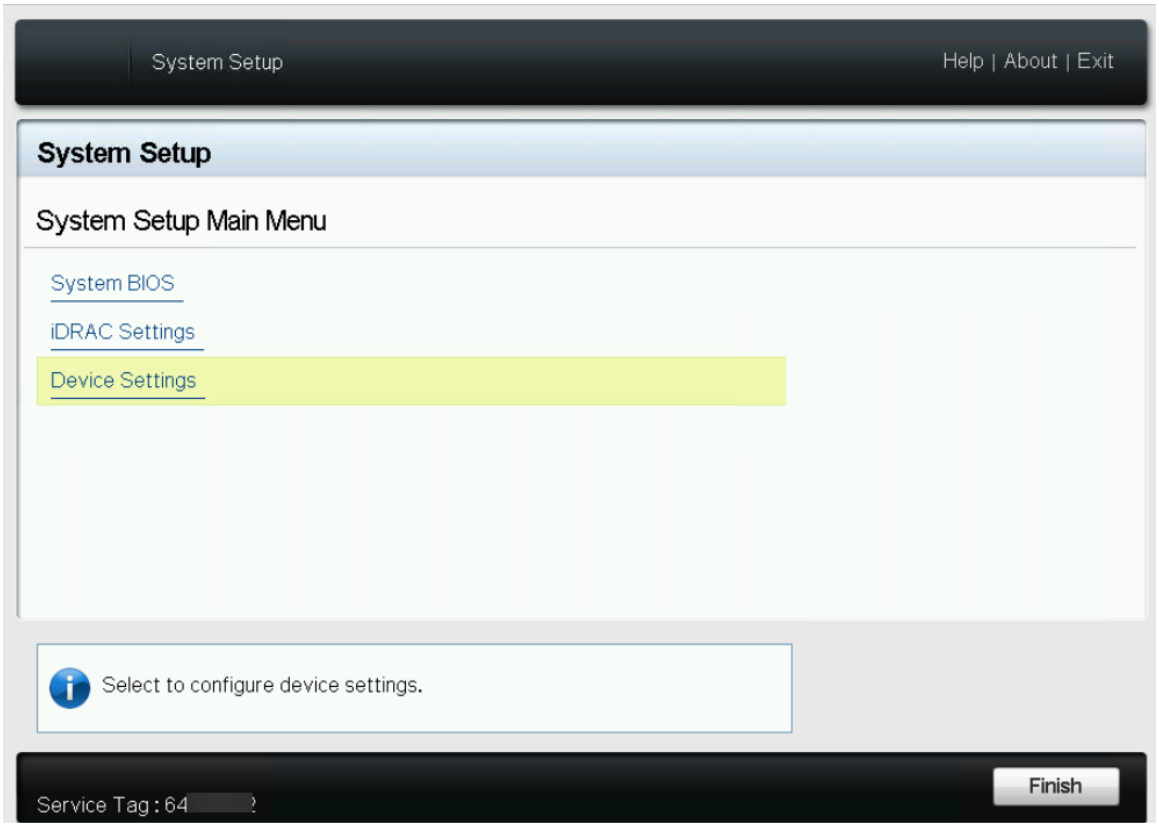
The HDD import may have failed because the RAID Controller's Auto Import Foreign Configuration setting was not enabled. It is prudent to check if this setting is enabled before creating a new RAID array which implies existing data will be lost. Go to the next step below if the screen above is displayed.

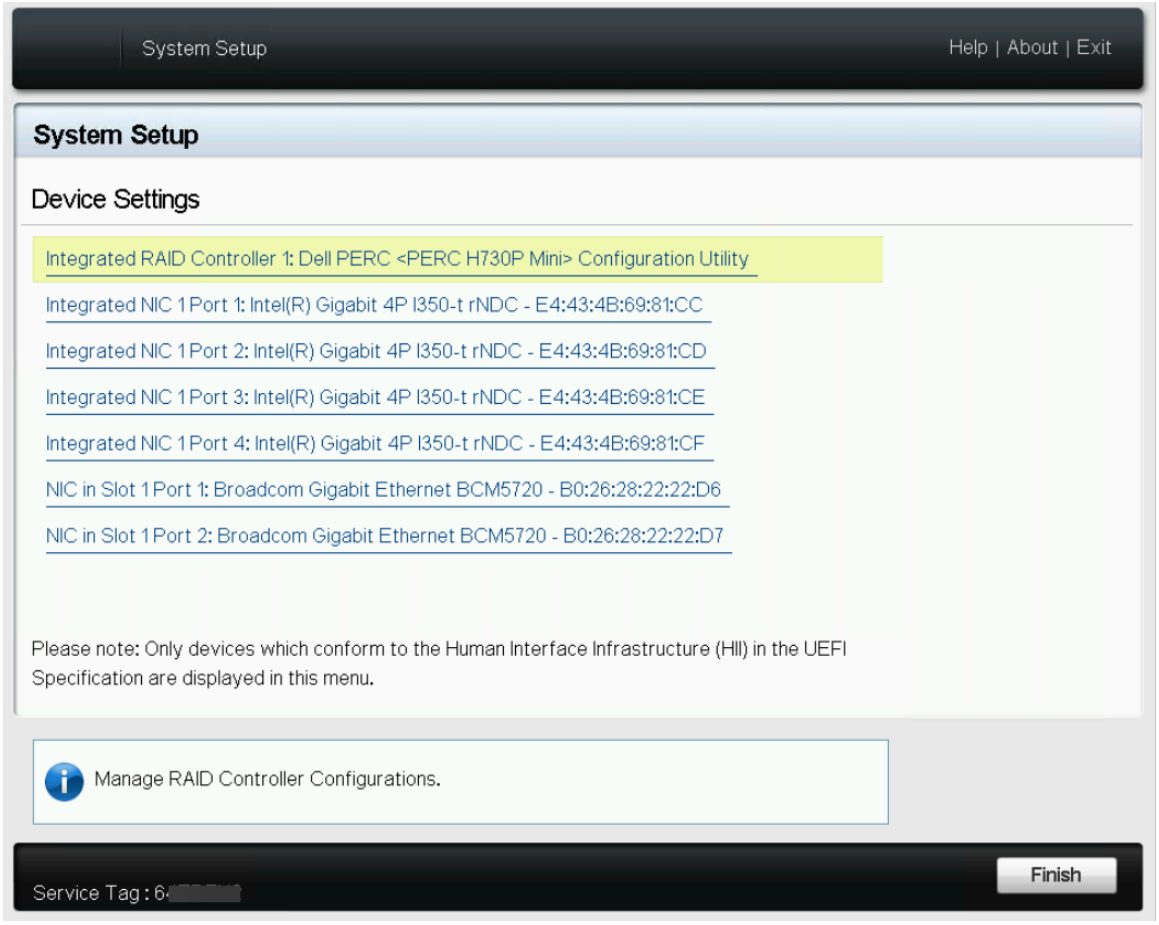
16. If the following screen is not displayed, push the power button to power OFF and then power ON the server. Select **F2** when prompted and to enter the System Setup menu.



17. From the **System Setup** menu, for H730P, select **Device Settings** > **Integrated RAID Controller 1: Dell PERC Configuration Utility** > **Controller Management**. For H755/

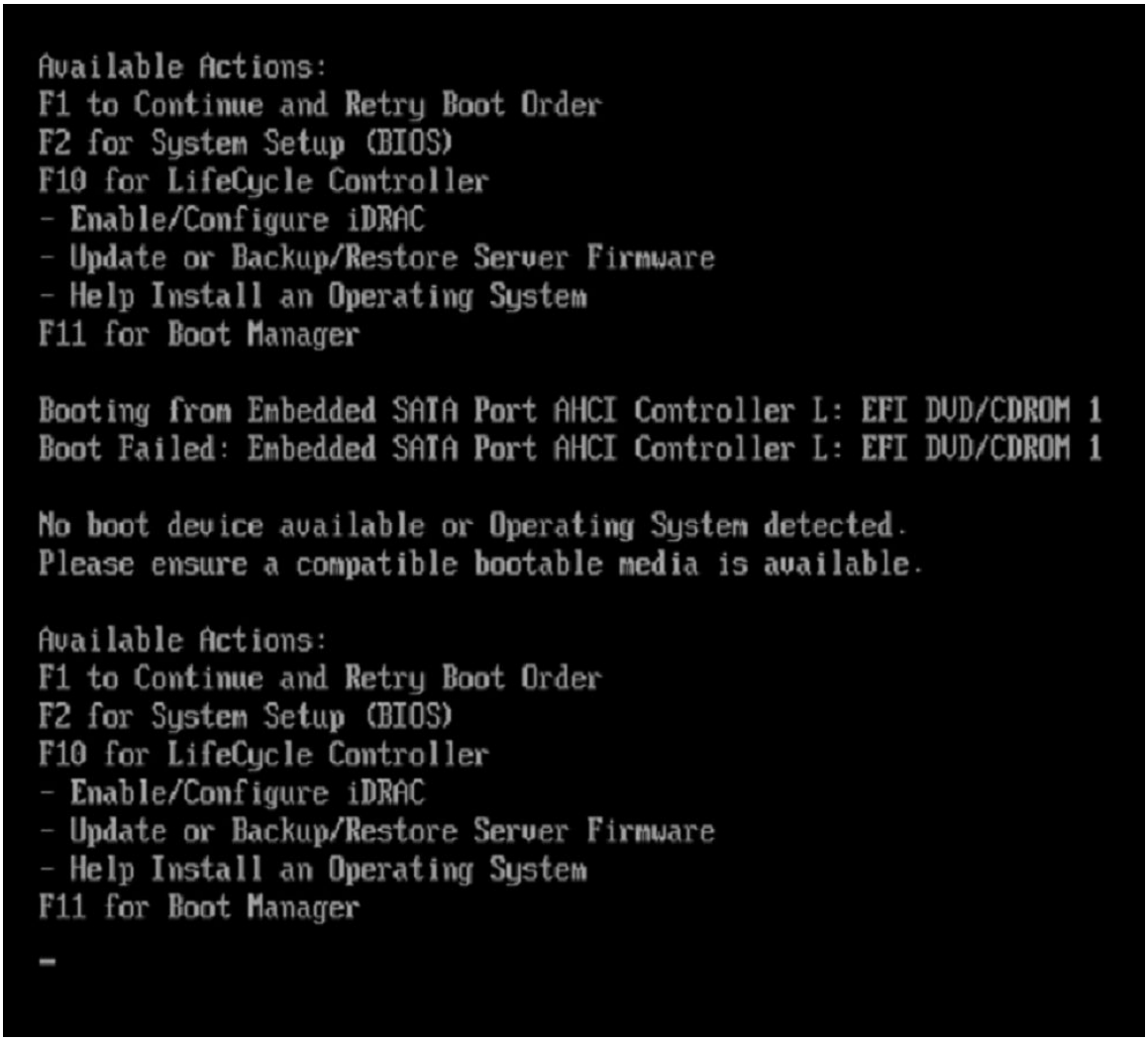
H750 RAID Controller, select **Device Settings** > **RAID Controller in Slot 1: Dell PERC H755/H750 Adaptor Configuration Utility** > **Main Menu** > **Controller Management**.



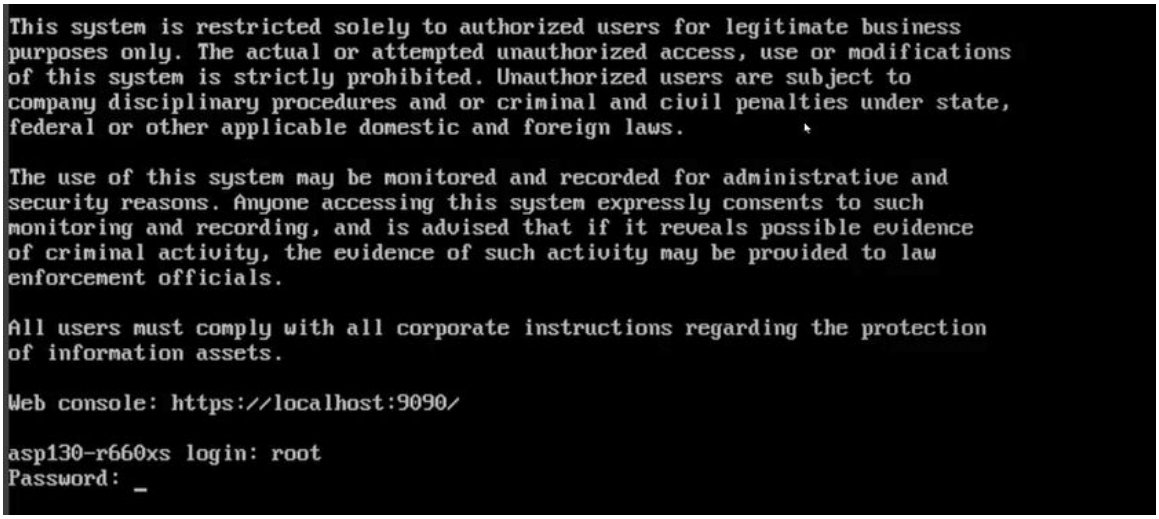


18. Select **Advanced Controller Properties**.
19. Ensure that **Auto Import Foreign Configuration** is set to **Enabled**. If enabled, move to next step below. If not set, select **Enabled**. User must move down to the bottom of screen, and select **Apply changes/OK**.
20. Select **Back/Finish/Finish/Finish/Yes** to exit the menus.
21. Power OFF the server by pressing and holding the power button located on the right front of the server until the system powers off.
22. Power ON the server by pressing the power button and let the server boot to see if HDDs will now import.
23. If the following screen reappears, it indicates that the system failed to import the foreign configuration, which includes the operating system (hypervisor), virtual machines, and other persistent data. This failure typically points to corruption within the drive metadata. A

new RAID array must be manually configured, followed by re-imaging of the server. Move to HDD import failure on page 181.



24. If ASP 130 R6.0.x (KVM on RHEL 8.10) has loaded as demonstrated in the screen below, go back to step 13 of this procedure and verify that the Host network configuration was not altered during the import process.



25. Update the server BIOS/firmware.

    - The process for updating BIOS/FW on an Avaya Dell R660xs is different than on an Avaya Dell R640.
    - Reference the appropriate and latest PSN on support.avaya.com for detailed instructions on updating the BIOS/Firmware.

    As of August 1, 2025:

    PSN027113u - Avaya Solutions Platform 100 Series Dell® R660xs Avaya Certified BIOS/ Firmware Update, Version 2

    PSN027112u - Avaya Solutions Platform 100 Series Dell® R640 Avaya Certified BIOS/ Firmware Update, Version 16

    - These servers must NOT be updated with BIOS or firmware updates from the vendor's web site.
    - Only Avaya provided updates can be used. Updating directly from the vendor's web site will result in an unsupported configuration.

26. The faulty server returned to Avaya must match the FRU logistics server as far as HDDs, Memory, CPU, PSUs, etc.

HDD import failure

The ASP R6.0.x 100 Series server FRUs, based on Dell R640 and R660xs platforms, are shipped with different default configurations. The R640 server FRU includes a single HDD and does not have a RAID array preconfigured. In contrast, the R660xs server FRUs are delivered fully

populated with HDDs, with the RAID array configured by default. An exception to this is the A31 configuration with 600 GB HDDs, which utilizes the A3 server FRU. For A31 deployments, two HDDs must be added, and the RAID array manually reconfigured prior to software installation. For the new 1.2 TB HDD FRU servers, the A31 will be fully populated with 8 HDDs.

Dell R660xs Hardware Profile – A1, A2 & A3 (600 GB HDD and 1.2 TB HDD); A31 (1.2TB HDD only)

1. Remove the HDDs from the server that failed the import.
2. Insert the HDDs that came with the FRU server.
3. Proceed to Chapter 14: R660xs RAID Configuration on page 78.
4. Proceed to Chapter 9: Performing server recovery and/or software remastering of the Installing the Avaya Solutions Platform 130 Series R6.0.x guide.

Dell R660xs Hardware Profile – A31 (for 600 GB HDD Server FRUs only)

1. Remove the HDDs from the server that failed the import.
2. Attempt to re-use 2 HDDs from the original failed server. If the system continues to fail, ordering 2 additional HDDs may be required. Contact Avaya support for guidance.
3. Insert the HDDs that came with the FRU server and the additional 2 HDDs.
4. Proceed to Chapter 14: R660xs RAID Configuration on page 78.
5. Proceed to Chapter 9: Performing server recovery and/or software remastering of the Installing the Avaya Solutions Platform 130 Series R6.0.x guide.

Dell R640 Hardware Profile – P2, P3, P4, P5 & P51

Note:

Dell R640 FRU servers come with a single HDD regardless of the hardware profile.

1. Attempt to re-use all HDDs from the original failed server. If the system continues to fail, ordering replacement HDDs may be required. Contact Avaya support for guidance.
2. Proceed to Chapter 27: R640 RAID Configuration on page 157.
3. Proceed to Chapter 9: Performing server recovery and/or software remastering of the Installing the Avaya Solutions Platform 130 Series R6.0.x guide.

Note:

The faulty server returned to Avaya *must match* the FRU logistics server as far as HDDs, Memory, CPU, PSUs etc.

Chapter 33: Resources

Avaya Solutions Platform 130/S8300 documentation

The following documents are available on Avaya support site at https://support.avaya.com/:

Title	Description
Avaya Solutions Platform 130/S8300 Overview and Specification	Describes the key features of Avaya Solutions Platform
Installing, Maintaining, and Troubleshooting Avaya Solutions Platform S8300	Describes how to install, maintain, and troubleshoot Avaya Solutions Platform S8300.
Installing the Avaya Solutions Platform 130 Series	Describes how to install Avaya Solutions Platform 130 Series 6.0.x.
Maintaining and Troubleshooting the Avaya Solutions Platform 130 Series 6.0.x	Describes procedures to maintain and troubleshoot Avaya Solutions Platform 130 Series 6.0.x.
Avaya Solutions Platform S8300 6.0.x Release Notes	Release Notes.
Avaya Solutions Platform 130 6.0.x Release Notes	Release Notes.
PCN2174Su – Avaya Solutions Platform S8300 6.0.x	Product Correction Notice (PCN) introducing the ASP S8300 R6.0.x software and subsequent Service Packs.
PCN2180Su – Avaya Solutions Platform S8300 6.0 SSP	Product Correction Notice (PCN) introducing the ASP S8300 R6.0.x Security Service Packs (SSPs) available beginning with ASP R6.0.0.3.0 and later.
PCN2173Su – Avaya Solutions Platform 130 6.0.x	Product Correction Notice (PCN) introducing the ASP 130 R6.0.x software and subsequent Service Packs.
PCN2179Su – Avaya Solutions Platform 130 6.0 SSP	Product Correction Notice (PCN) introducing the ASP 130 R6.0.x Security Service Packs (SSPs) available beginning with ASP R6.0.0.3.0 and later.
Avaya Solutions Platform R6.0.x Security Service Pack Installation Application Note	Instructions for installing ASP Security Service Packs (SSPs).

Table continues…

Title	Description
ASP 130 R6.0.0.4.0 and Later VLAN & VLAN TRUNKING CONFIGURATION GUIDE	This application note provides guidance for configuring VLANs and enabling VLAN trunking on ASP R6.0.0.4.0 (KVM on RHEL 8.10) or later release. It is intended for system administrators and technical users responsible for deploying and managing virtual infrastructure on Avaya Solutions Platform (ASP) compute servers.
ASP 130 R6.0.0.3.0 and Earlier VLAN & VLAN TRUNKING CONFIGURATION GUIDE	This application note provides guidance for configuring VLANs and enabling VLAN trunking on ASP R6.0.0.3.0 (KVM on RHEL 8.10) or earlier release. It is intended for system administrators and technical users responsible for deploying and managing virtual infrastructure on Avaya Solutions Platform (ASP) compute servers.
Port Matrix for ASP S8300	This document provides a list of interfaces, TCP and UDP ports that hardware components and applications use for intra-connections and for inter-connections with external applications or devices.
Port Matrix for ASP 130	This document provides a list of interfaces, TCP and UDP ports that hardware components and applications use for intra-connections and for inter-connections with external applications or devices.
Policies for technical support of the Avaya Solutions Platform (ASP) 130 and S8300E R6.0.x	This document and statements related to support are only with respect to Avaya Services support of the software and hardware of the Avaya Solutions Platform (ASP) 130 server and S8300E server based on supported and tested configurations.
Avaya Solutions Platform 130 Series iDRAC9 Best Practices	Describes the best practices of using the Integrated Dell Remote Access Controller (iDRAC).
PSN027113u - Avaya Solutions Platform 100 Series Dell® R660xs Avaya Certified BIOS/Firmware Update, Version 2	Always check for a newer version of Avaya certified BIOS/Firmware. New PSNs are published for each new release.

Table continues…

Title	Description
PSN027112u - Avaya Solutions Platform 100 Series Dell® R640 Avaya Certified BIOS/Firmware Update, Version 16	Always check for a newer version of Avaya certified BIOS/Firmware. New PSNs are published for each new release.
Avaya Solutions Platform 130 R6.0.0.5.0 Application Note: Hypervisor Backup and Recovery using Relax-and-Recover (ReaR)	This application note describes how to utilize the ReaR tool to allow ASP 130 hosts to be restored to a known-good state in the event of issues such as data corruption.
Avaya Solutions Platform R6.0.0.5.0 Application Note: Remote Syslog Configuration	This application note provides guidance on how to configure and implement remote syslog.
Avaya Solutions Platform 130 & S8300 Series Updating to R6.0.0.x.0 documents listed below	Follow the steps outlined in the appropriate document(s) when planning and conducting updates to ASP R6.0.x KVM on RHEL 8.10 hosts running on ASP 130 & S8300E servers using the Avaya certified and approved files. Always check support.avaya.com for new documents as new Service Packs are released.
Avaya Solutions Platform 130 & S8300 Series Updating to R6.0.0.5.0 (RHEL 8.10) from R6.0.0.3.0 (RHEL 8.10) or later	**Note:** Upgrades to R6.0.0.5.0 and later R6.0.0.x.0 service packs require a step upgrade to R6.0.0.3.0 first.
Avaya Solutions Platform 130 & S8300 Series Updating to R6.0.0.4.0 (RHEL 8.10) from R6.0.0.3.0 (RHEL 8.10)	**Note:** Upgrades to R6.0.0.4.0 and later R6.0.0.x.0 service packs require a step upgrade to R6.0.0.3.0 first.
Avaya Solutions Platform 130 & S8300 Series Updating to R6.0.0.3.0 (RHEL 8.10) from R6.0.x (RHEL 8.10)	
Avaya Solutions Platform 130 & S8300 Series Updating to R6.0.0.2.0 (RHEL 8.10) from R6.0.x (RHEL 8.10)	
Avaya Solutions Platform 130 & S8300 Series Updating to R6.0.0.1.1 (RHEL 8.10) from R6.0.x (RHEL 8.10)	
Avaya Solutions Platform 130 & S8300 Series Updating to R6.0.0.1 (RHEL 8.10) from R6.0.x (RHEL 8.10)	

Note:

Documents for migrating from AVP and older ASP R5.x EOMS releases can be found on support.avaya.com.

Finding documents on the Avaya Support website

Procedure

1. Go to https://support.avaya.com.
2. To log in, click **Sign In** at the top of the screen and then enter your login credentials when prompted.
3. Click **Product Support** > **Documents**.
4. In **Search Product**, start typing the product name and then select the appropriate product from the list displayed.
5. In **Select Release**, select the appropriate release number.

   This field is not available if there is only one release for the product.
6. **(Optional)** In **Enter Keyword**, type keywords for your search.
7. From the **Select Content Type** list, select one or more content types.

   For example, if you only want to see user guides, click **User Guides** in the **Select Content Type** list.
8. Click to display the search results.

Avaya Documentation Center navigation

For many programs, the latest customer documentation is available on the Avaya Documentation Center website at https://documentation.avaya.com. Some functionality is only available when you log in to the Avaya Documentation Center. The available functionality depends on your role.

Important:

If the documentation you are looking for is not available on the Avaya Documentation Center, you can find it on the Avaya Support website.

While navigating through the Documentation Center, you can click the **Avaya Documentation Center** logo at the top of the screen to return to the home page anytime. On the Avaya Documentation Center, you can do the following:

- Click **Avaya Links** in the top menu bar to access other Avaya websites, including the Avaya Support website.
- Click **Languages** ( ) in the top menu bar to change the display language and view localized documents.
- In the **Search Documentation** field, search for keywords and click **Filter** to filter by solution category, product, or user role.

  You can select multiple items in each filter category. For example, you can select a product and multiple user roles.

- Click **Library** in the top menu bar to access the complete library of documents. Use the filtering options to refine your results.
- After performing a search or accessing the library, you can sort content on the search results page. When you find the item you want to view, click it to open it.
- Use the table of contents in a document for navigation. You can also click **<** or **>** next to the document title to navigate to the previous topic or the next topic.
- Click **Share** ( ) to share a topic by email or copy the URL.
- Download a PDF of the current topic in a document, the topic and its subtopics, or the entire document.
- Print the section you are viewing.
- Add content to a collection by clicking **Add to My Topics** ( ). You can add the topic and its subtopics or add the entire publication.
- View the topics in your collections. To access your collections, click your name in the top menu bar and then click **My Topics**.

  You can do the following:

  - Create, rename, and delete a collection.
  - Set a collection as the default or favorite collection.
  - Save a PDF of the selected content in a collection and download it to your computer.
  - Share content in a collection with others through email.
  - Receive collections that others have shared with you.
- Click **Watch** ( ) to add a topic to your watchlist so you are notified when the content is updated or removed.
- View and manage your watchlist by clicking **Watchlist** from the top menu with your name.

  You can do the following:

  - Enable **Email notifications** to receive email alerts.
  - Unwatch the selected content or all topics.
- Send feedback for a topic.

Support

Go to the Avaya Support website at http://support.avaya.com for the most up-to-date documentation, product notices, and knowledge articles. You can also search for release notes, downloads, and resolutions to issues. Use the online service request system to create a service 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.

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