



Installing and Maintaining Dell™ R610 Hardware for Avaya IQ Turnkey Deployments

Release 5.2
March 2014

Notice

While reasonable efforts have been made to ensure that the information in this document is complete and accurate at the time of printing, Avaya assumes no liability for any errors. Avaya reserves the right to make changes and corrections to the information in this document without the obligation to notify any person or organization of such changes.

Documentation disclaimer

"Documentation" means information published by Avaya in varying mediums which may include product information, operating instructions and performance specifications that Avaya may generally make available to users of its products and Hosted Services. Documentation does not include marketing materials. Avaya shall not be responsible for any modifications, additions, or deletions to the original published version of documentation unless such modifications, additions, or deletions were performed by Avaya. End User agrees to indemnify and hold harmless Avaya, Avaya's agents, servants and employees against all claims, lawsuits, demands and judgments arising out of, or in connection with, subsequent modifications, additions or deletions to this documentation, to the extent made by End User.

Link disclaimer

Avaya is not responsible for the contents or reliability of any linked websites referenced within this site or documentation provided by Avaya. Avaya is not responsible for the accuracy of any information, statement or content provided on these sites and does not necessarily endorse the products, services, or information described or offered within them. Avaya does not guarantee that these links will work all the time and has no control over the availability of the linked pages.

Warranty

Avaya provides a limited warranty on Avaya hardware and software. Refer to your sales agreement to establish the terms of the limited warranty. In addition, Avaya's standard warranty language, as well as information regarding support for this product while under warranty is available to Avaya customers and other parties through the Avaya Support website: <http://support.avaya.com> or such successor site as designated by Avaya. Please note that if you acquired the product(s) from an authorized Avaya Channel Partner outside of the United States and Canada, the warranty is provided to you by said Avaya Channel Partner and not by Avaya.

Licenses

THE SOFTWARE LICENSE TERMS AVAILABLE ON THE AVAYA WEBSITE, [HTTP://SUPPORT.AVAYA.COM/LICENSEINFO](http://support.avaya.com/licenseinfo) OR SUCH SUCCESSOR SITE AS DESIGNATED BY AVAYA, ARE APPLICABLE TO ANYONE WHO DOWNLOADS, USES AND/OR INSTALLS AVAYA SOFTWARE, PURCHASED FROM AVAYA INC., ANY AVAYA AFFILIATE, OR AN AVAYA CHANNEL PARTNER (AS APPLICABLE) UNDER A COMMERCIAL AGREEMENT WITH AVAYA OR AN AVAYA CHANNEL PARTNER. UNLESS OTHERWISE AGREED TO BY AVAYA IN WRITING, AVAYA DOES NOT EXTEND THIS LICENSE IF THE SOFTWARE WAS OBTAINED FROM ANYONE OTHER THAN AVAYA, AN AVAYA AFFILIATE OR AN AVAYA CHANNEL PARTNER; AVAYA RESERVES THE RIGHT TO TAKE LEGAL ACTION AGAINST YOU AND ANYONE ELSE USING OR SELLING THE SOFTWARE WITHOUT A LICENSE. BY INSTALLING, DOWNLOADING OR USING THE SOFTWARE, OR AUTHORIZING OTHERS TO DO SO, YOU, ON BEHALF OF YOURSELF AND THE ENTITY FOR WHOM YOU ARE INSTALLING, DOWNLOADING OR USING THE SOFTWARE (HEREINAFTER REFERRED TO INTERCHANGEABLY AS "YOU" AND "END USER"), AGREE TO THESE TERMS AND CONDITIONS AND CREATE A BINDING CONTRACT BETWEEN YOU AND AVAYA INC. OR THE APPLICABLE AVAYA AFFILIATE ("AVAYA").

Avaya grants you a license within the scope of the license types described below, with the exception of Heritage Nortel Software, for which the scope of the license is detailed below. Where the order documentation does not expressly identify a license type, the applicable license will be a Designated System License. The applicable number of licenses and units of capacity for which the license is granted will be one (1), unless a different number of licenses or units of capacity is specified in the documentation or other materials available to you. "Software" means Avaya's computer programs in object code, provided by Avaya or an Avaya Channel Partner, whether as stand-alone products, pre-installed, or remotely accessed on hardware products, and any upgrades, updates, bug fixes, or modified versions thereto. "Designated Processor" means a single stand-alone computing device. "Server" means a Designated Processor that hosts a software application to be accessed by multiple users. "Instance" means a single copy of the Software executing at a particular time: (i) on one physical machine; or (ii) on one deployed software virtual machine ("VM") or similar deployment.

License types

Designated System(s) License (DS). End User may install and use each copy or an Instance of the Software only on a number of Designated Processors up to the number indicated in the order. Avaya may require the Designated Processor(s) to be identified in the order by type, serial number, feature key, Instance, location or other specific designation, or to be provided by End User to Avaya through electronic means established by Avaya specifically for this purpose.

Concurrent User License (CU). End User may install and use the Software on multiple Designated Processors or one or more Servers, so long as only the licensed number of Units are accessing and using the Software at any given time. A "Unit" means the unit on which Avaya, at its sole discretion, bases the pricing of its licenses and can be, without limitation, an agent, port or user, an e-mail or voice mail account in the name of a person or corporate function (e.g., webmaster or helpdesk), or a directory entry in the administrative database utilized by the Software that permits one user to interface with the Software. Units may be linked to a specific, identified Server or an Instance of the Software.

Database License (DL). End User may install and use each copy or an Instance of the Software on one Server or on multiple Servers provided that each of the Servers on which the Software is installed communicates with no more than an Instance of the same database.

CPU License (CP). End User may install and use each copy or Instance of the Software on a number of Servers up to the number indicated in the order provided that the performance capacity of the Server(s) does not exceed the performance capacity specified for the Software. End User may not re-install or operate the Software on Server(s) with a larger performance capacity without Avaya's prior consent and payment of an upgrade fee.

Named User License (NU). You may: (i) install and use the Software on a single Designated Processor or Server per authorized Named User (defined below); or (ii) install and use the Software on a Server so long as only authorized Named Users access and use the Software. "Named User", means a user or device that has been expressly authorized by Avaya to access and use the Software. At Avaya's sole discretion, a "Named User" may be, without limitation, designated by name, corporate function (e.g., webmaster or helpdesk), an e-mail or voice mail account in the name of a person or corporate function, or a directory entry in the administrative database utilized by the Software that permits one user to interface with the Software.

Shrinkwrap License (SR). You may install and use the Software in accordance with the terms and conditions of the applicable license agreements, such as "shrinkwrap" or "clickthrough" license accompanying or applicable to the Software ("Shrinkwrap License").

Copyright

Except where expressly stated otherwise, no use should be made of materials on this site, the Documentation, Software, Hosted Service, or hardware provided by Avaya. All content on this site, the

documentation, Hosted Service, and the Product provided by Avaya including the selection, arrangement and design of the content is owned either by Avaya or its licensors and is protected by copyright and other intellectual property laws including the sui generis rights relating to the protection of databases. You may not modify, copy, reproduce, republish, upload, post, transmit or distribute in any way any content, in whole or in part, including any code and software unless expressly authorized by Avaya. Unauthorized reproduction, transmission, dissemination, storage, and or use without the express written consent of Avaya can be a criminal, as well as a civil offense under the applicable law.

Third Party Components

“Third Party Components” mean certain software programs or portions thereof included in the Software or Hosted Service may contain software (including open source software) distributed under third party agreements (“Third Party Components”), which contain terms regarding the rights to use certain portions of the Software (“Third Party Terms”). As required, information regarding distributed Linux OS source code (for those Products that have distributed Linux OS source code) and identifying the copyright holders of the Third Party Components and the Third Party Terms that apply is available in the Documentation or on Avaya’s website at: <http://support.avaya.com/Copyright> or such successor site as designated by Avaya. You agree to the Third Party Terms for any such Third Party Components

Note to Service Provider

The Product or Hosted Service may use Third Party Components subject to Third Party Terms that do not allow hosting and require a Service Provider to be independently licensed for such purpose. It is your responsibility to obtain such licensing.

Preventing Toll Fraud

“Toll Fraud” is the unauthorized use of your telecommunications system by an unauthorized party (for example, a person who is not a corporate employee, agent, subcontractor, or is not working on your company's behalf). Be aware that there can be a risk of Toll Fraud associated with your system and that, if Toll Fraud occurs, it can result in substantial additional charges for your telecommunications services.

Avaya Toll Fraud intervention

If you suspect that you are being victimized by Toll Fraud and you need technical assistance or support, call Technical Service Center Toll Fraud Intervention Hotline at +1-800-643-2353 for the United States and Canada. For additional support telephone numbers, see the Avaya Support website: <http://support.avaya.com> or such successor site as designated by Avaya. Suspected security vulnerabilities with Avaya products should be reported to Avaya by sending mail to: securityalerts@avaya.com.

Trademarks

The trademarks, logos and service marks (“Marks”) displayed in this site, the Documentation, Hosted Service(s), and Product(s) provided by Avaya are the registered or unregistered Marks of Avaya, its affiliates, or other third parties. Users are not permitted to use such Marks without prior written consent from Avaya or such third party which may own the Mark. Nothing contained in this site, the Documentation, Hosted Service(s) and Product(s) should be construed as granting, by implication, estoppel, or otherwise, any license or right in and to the Marks without the express written permission of Avaya or the applicable third party.

Avaya is a registered trademark of Avaya Inc.

Aura is a registered trademark of Avaya Inc.

All non-Avaya trademarks are the property of their respective owners. Linux® is the registered trademark of Linus Torvalds in the U.S. and other countries.

Downloading Documentation

For the most current versions of Documentation, see the Avaya Support website: <http://support.avaya.com>, or such successor site as designated by Avaya.

Contact Avaya Support

See the Avaya Support website: <http://support.avaya.com> for Product or Hosted Service notices and articles, or to report a problem with your Avaya Product or Hosted Service. For a list of support telephone numbers and contact addresses, go to the Avaya Support website: <http://support.avaya.com> (or such successor site as designated by Avaya), scroll to the bottom of the page, and select Contact Avaya Support.

Contents

Chapter 1: Turnkey hardware installation and maintenance	7
Introduction to turnkey hardware installation and maintenance.....	7
How to use this document.....	8
Dell documentation set.....	8
Downloading Dell documentation.....	9
Chapter 2: Introduction to turnkey hardware	11
Turnkey server configurations.....	11
Dell R610 server.....	12
Front of R610 server.....	12
Back of R610 server.....	13
R610 server component specifications.....	14
Dell R610 server physical specifications.....	15
Dell MD1220 disk array.....	15
Front view of MD1220 disk array.....	15
Back view of MD1220 disk array.....	16
MD1220 component specifications.....	17
MD1220 physical specifications.....	17
Dell server and disk array environmental specifications.....	17
Chapter 3: Installing turnkey servers and disk arrays	19
Introduction to installation procedures.....	19
Registering hardware.....	20
Installing the server in the rack.....	20
Installing the disk array.....	22
Turning on the disk arrays.....	24
Chapter 4: Troubleshooting problems on the R610 server and MD1220 disk array	25
General troubleshooting.....	25
Front panel troubleshooting indicators.....	26
Rear panel troubleshooting components.....	27
Troubleshooting external server components.....	28
Troubleshooting internal server components.....	30
Troubleshooting external MD1220 disk array components.....	31
Dell diagnostic tools.....	33
Overview of Dell diagnostic tools.....	33
Configuring iDRAC.....	34
Using iDRAC.....	35
Configuring OMSA.....	36
Using OMSA.....	37
Chapter 5: Replacing components	39
Replacing components in the R610 Server.....	39
Safety information.....	39
Replacing external R610 server components.....	43
Replacing internal R610 server components.....	44
Returning defective equipment.....	46
LCD status message explanations.....	47

Additional requirements when replacing an R610 server..... 55
Replacing MD1220 disk array components..... 56
Index..... 59

Chapter 1: Turnkey hardware installation and maintenance

Introduction to turnkey hardware installation and maintenance

This document describes the installation and maintenance of the Dell™ PowerEdge™ R610 Server and the Dell™ PowerVault™ MD1220 disk arrays when used with the Avaya IQ turnkey solution.

! Important:

Only Avaya associates or Certified Avaya Business Partner associates must perform the installation and maintenance of the Dell servers and disk arrays. Customers must *not* perform the procedures this document outlines.

This document includes the following topics:

- Installing the R610 server as an application host or as a database host
- Installing the MD1220 disk array and connecting it to an R610 server being used as a database host
- Replacing components in the R610 server
- Troubleshooting problems with the R610 server and the MD1220 disk array
- Replacing an R610 server that has failed completely and recovering user data from the old system
- Obtaining service on an R610 server or an MD1220 disk array

Avaya Global Services provides optional maintenance coverage for the R610 servers and the MD1220 disk arrays. In some cases, Dell will assist Avaya for some maintenance activities including on-site support, but all maintenance requests should go through Avaya.

How to use this document

This guide contains information for installing the Dell™ PowerEdge™ R610 server and the Dell™ MD1220 disk array as part of an Avaya IQ deployment and provides:

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

Dell documentation set

For Dell R610 server and Dell MD1220 disk array installation information and procedures, see the following documents.

 **Note:**

Download the documents listed in the “Documents to download” section. Printed copies of the documents listed in the “Documents included in the shipping container” section ship with the server.

Documents to download

Title	Abbreviation	Part number
Getting Started With Your System	GS	R465D (R610) H476M (MD1220)
Hardware Owner's Manual	HOM	No number

Documents included in the shipping container

Title	Abbreviation	Part number
Product Safety, EMC & Environmental Datasheet	PS	No number
Technical Guidebook	TG	No number
Setting Up Your Dell PowerVault Storage Enclosure	SU	No number

Title	Abbreviation	Part number
Cable Management Arm Installation (R610)	CMAI	0F880KA00
Rack Installation (Sliding Rails) (R610)	RI-SR	0J171KA00
Rack Installation Instructions (MD1220)	RI	0K422MA00

Downloading Dell documentation

Procedure

1. Open a browser and go to:
<http://www.support.dell.com/>
2. On the Welcome to Dell Support page, select **Start Here** in the Support for Enterprise IT section.

*** Note:**

After you gain access to the **Start Here** page the first time, the Dell Support Web page may take you directly to the **Select a product** page.

3. On the Welcome to Enterprise IT Support page, select **Select a product** in the Product Support section.
4. On the next page, select **Select Model** in the Choose a Model section.
5. On the Select Product by Model page, select **Servers, Storage, Networking**.
6. On the next page, do one of the following:
 - For the R610 server, select **PowerEdge Server** from the list of products.
 - For the MD1220 disk array, select **PowerVault Storage** from the list of products.
7. On the next page, do one of the following:
 - For the R610 server, select **R610** from the list of server models.
 - For the MD1220 disk array, select **MD1220** from the list of storage models.
8. Select **Confirm**.
9. On the product support page, select **Manuals and Documentation**.
10. To view or download the documents listed in the [Dell documentation set](#) on page 8, use the **View** or **Download** links.

Chapter 2: Introduction to turnkey hardware

Turnkey server configurations

The following hardware configurations support turnkey deployments:

All-in-One host

The All-in-One host configuration consists of the following components:

- One Dell R610 server that acts as the application host and the database host.
- One or two optional Data Collection hosts to support remote data sources.

Single host

The Single host configuration consists of the following components:

- One Dell R610 server that acts as the application host and the database host.
- One or more Dell MD1220 disk arrays that provide database storage.

The MD1220 disk array connects directly to the H800 RAID controller card in the R610 server using an SAS cable. The H800 RAID controller card has two ports. You can connect up to eight MD1220 disk arrays to the H800 RAID controller card, four connected to one port and four connected to the other port. The MD1220 disk arrays connect in serial fashion, one disk array to the next.

- Up to four optional Data Collection hosts to support remote data sources.

Dual host

The Dual host configuration consists of the following components:

- One Dell R610 server that acts as the application host.
- One Dell R610 server that acts as the database host.
- One or more Dell MD1220 disk arrays that provide database storage.

The MD1220 disk array connects directly to the H800 RAID controller card in the R610 server using an SAS cable. The H800 RAID controller card has two ports. You can connect up to eight MD1220 disk arrays to the H800 RAID controller card, four connected to one port and four connected to the other port. The MD1220 disk arrays connect in serial fashion, one disk array to the next.

- Up to eight optional Data Collection hosts to support remote data sources.

Multi-host

The Multi-host configuration consists of the following components:

- A minimum of four Dell R610 servers that act as the different application hosts.
- One Dell R610 server that acts as the database host.
- One or more Dell MD1220 disk arrays that provide database storage.

The MD1220 disk array connects directly to the H800 RAID controller card in the R610 server using an SAS cable. The H800 RAID controller card has two ports. You can connect up to eight MD1220 disk arrays to the H800 RAID controller card, four connected to one port and four connected to the other port. The MD1220 disk arrays connect in serial fashion, one disk array to the next.

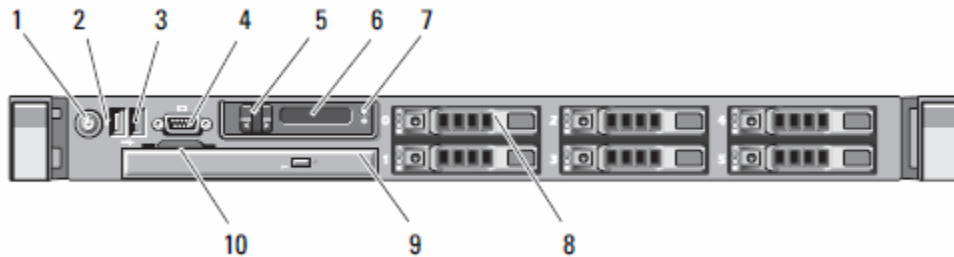
- Up to 24 optional Data Collection hosts to support remote data sources.

*** Note:**

Part numbers for each host type are given in [Introduction to R610 installation procedures](#) on page 19. Each host is labeled with a designation that defines the purpose of the host.

Dell R610 server

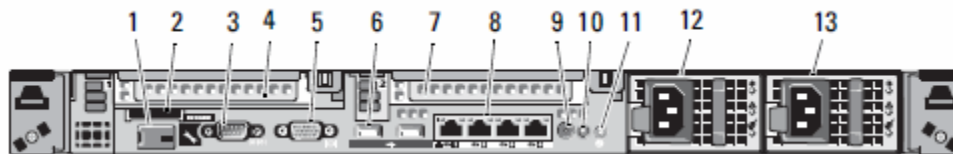
Front of R610 server



Reference	Description
1	Power-on indicator, power button
2	NMI button
3	USB connectors (2)
4	Video connector
5	LCD menu buttons
6	LCD panel

Reference	Description
7	System identification button
8	SAS 2.5" 6G DP Hard Drive. Two base configurations: <ul style="list-style-type: none"> • For All-in-One deployments, two 300-GB disks for OS, four 600-GB disks for database data • For application and database hosts in Single, Dual, and Multi-host deployments, four 146-GB disks for OS
9	Optical disc drive
10	System identification panel

Back of R610 server



Reference	Description
1	iDRAC6 Enterprise port
2	VFlash media slot (not used with Avaya IQ)
3	Serial connector
4	PCIe slot 1 This slot contains the H800 RAID card used to connect the disk arrays.
5	Video connector
6	USB connectors (2)
7	PCIe slot 2 * Note: Avaya IQ does not use PCIe slot 2.
8	Ethernet connectors (4), numbered 1-4, left-to-right
9	System status indicator connector
10	System status indicator

Reference	Description
11	System identification button
12	Power supply 1 (PS1)
13	Power supply 2 (PS2)

R610 server component specifications

Component	Specifications
R610	1U chassis, dual socket
Processor	Intel X5670 six core/2.93 GHz (Westmere)
Memory	4 GB DDR3 RDIMMs (1333 MHz). Two base configurations: <ul style="list-style-type: none"> • For All-in-One deployments, six RDIMMS for 24 GB • For application and database hosts in Single, Dual, and Multi-host deployments, 12 RDIMMS for 48 GB
Hardware RAID	H700 RAID controller with 512-MB cache and battery backup. Optioned as RAID 10. H800 RAID controller with 512-MB cache — used for connections with the MD1220 disk arrays. Optioned as RAID 10.
Hot-Plug disk drive cage	Six small form factor 2.5" hot-plug hard drives bays included in base unit
Disk drive	SAS 2.5" 6G DP Hard Drive. Two base configurations: <ul style="list-style-type: none"> • For All-in-One deployments, two 300-GB disks for OS, four 600-GB disks for database data • For application and database hosts in Single, Dual, and Multi-host deployments, four 146-GB disks for OS
NICs	Four integrated ENET gigabit NIC ports with TCP offload engine (included on motherboard)
PCI slots	Two PCIe risers (left and center) provide: <ul style="list-style-type: none"> • Two x 8 PCIe Gen2 slots • One x 4 PCIe Gen 1 slot • FH/HL PCIe card support
Removable media	DVD+/-RW SATA internal
Power supply	Dual, redundant, 717 W AC hot plug power supplies
Fans	Redundant Speed Adjusting Fans standard (10 fans)

Component	Specifications
Additional items	Two front USB, two back USB, one internal USB

Dell R610 server physical specifications

Type	Description
Dimensions	Height: 4.26 cm (1.68 in)
	Width: <ul style="list-style-type: none"> • 48.24 cm (18.99 in) with rack latches • 42.4 cm (16.99 in) without rack latches
	Depth: <ul style="list-style-type: none"> • 77.2 cm (30.39 in) with power supplies and bezel • 73.73 cm (29.02 in) without power supplies and bezel
Weight (maximum configuration)	17.69 kg (39 lb)
Weight (empty)	13.25 kg (29.2 lb)

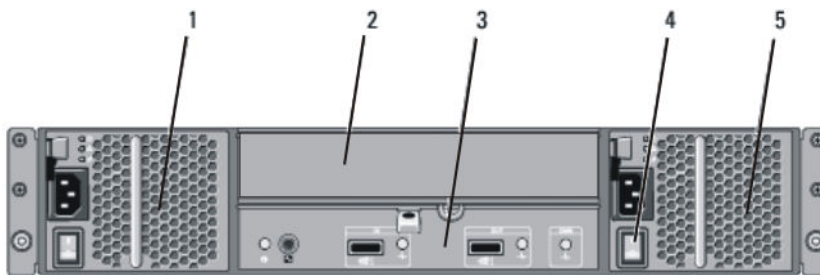
Dell MD1220 disk array

Front view of MD1220 disk array



Reference	Description
1	Enclosure status LED
2	Power LED
3	Split mode LED
4	System identification button
5	Twenty-four 300-GB SAS 2.5" 10K RPM hard drives
6	Enclosure mode switch

Back view of MD1220 disk array



Reference	Description
1	Power supply/cooling fan module
2	Upper enclosure management module (EMM) (not used)
3	Lower EMM
4	Power switches (2)

Reference	Description
5	Power supply/cooling fan module

MD1220 component specifications



Component	Specifications
MD1220	2U chassis, dual socket
HW RAID	Connects to H800 RAID controller on server
Hot-Plug disk drive cage	Twenty-four small form factor 2.5" hot-plug hard drives bays included in the base unit
Disk drive	Twenty-four 300-GB SAS 2.5" 10K RPM hard drives
Power supply	Dual, redundant, 600 W AC hot plug power supplies

MD1220 physical specifications

Specification	Value
Dimensions	Height: 8.68 cm (3.41 in)
	Width: 44.63 cm (17.57 in)
	Depth: 54.90 cm (21.61 in)
Weight (maximum configuration)	23.31 kg (51.4 lb)
Weight (empty)	8.61 kg (19 lb)

Dell server and disk array environmental specifications

Specification	Value
Temperature	
Operating	10° to 35°C (50° to 95°F) with a maximum temperature gradation of 10°C per hour

Specification	Value
	<p> Note: For altitudes above 2,950 feet, the maximum operating temperature is de-rated 1°F per 550 ft.</p>
Storage	-40° to 65°C (-40° to 149°F) with a maximum temperature gradation or 20°C per hour
Relative Humidity	
Operating	20% to 80% (noncondensing) with a maximum humidity gradation of 10% per hour
Storage	5% to 95% (noncondensing) with a maximum humidity gradation of 10% per hour
Altitude	
Operating	<p>-16 to 3,048 m (-50 to 10,000 ft.)</p> <p> Note: For altitudes above 2,950 ft, the maximum operating temperature is de-rated 1°F per 550 ft.</p>
Storage	-16 to 10,600 m (-50 to 35,000 ft.)

Chapter 3: Installing turnkey servers and disk arrays

Introduction to installation procedures

This section describes the following procedures:

- Registering hardware.
- Installing the R610 server in an equipment rack.
- Installing the MD1220 disk array in an equipment rack.
- Cabling the MD1220 disk array to an R610 server.
- Turning on the R610 server.
- Turning on the MD1220 disk arrays.

Important:

You can use the R610 server with Avaya IQ for application hosts and the database host. The labels on the servers and disk arrays shipped from the factory read as follows:

- All-in-One host — 264934, IQ R5.2 R610 ALL IN ONE SRVR
- Application host — 264216, IQ R5.2 R610 SRVR APPL
- Database host — 264217, IQ R5.2 R610 SRVR DB
- Disk array — 264218, IQ R5.2 MD1220 EXT DISK ARRAY

For a Single host deployment, you only receive the server designated as the Database Host (264217).

The R610 rail kits are Versa Rail kits which are adjustable for standard length server racks (27 inches) and nonstandard length server racks (25 inches). These rail kits go from 24 to 29 1/8 inches in length. The width of the servers are 19 inches for standard server racks.

The MD1220 rail kits are Rapid Rail kits that go from 28 to 29 1/8 inches for standard server racks. You can order adapter brackets from Dell, part number A4182470, or you can order adapter brackets from many independent equipment rack providers, such as:

<http://www.racksolutions.com/>

Registering hardware

Register the hardware with Avaya and Dell as required by your local processes. You will need the service tag information from the shipping container. Register both servers and disk arrays.


Installing the server in the rack

This installation checklist contains the principle steps that are necessary to install the server in the rack. Each task refers to an existing Dell document and the topic title(s) that contains the step-by-step procedures. Where applicable, additional information and clarifications appear in the *Avaya recommendation* column. Perform each task in the order specified.

 **Note:**

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

No.	Task	Reference	Avaya recommendation	✓
1	Observe safety warnings.	PS RI-SR		
2	Examine contents of shipping container (Avaya provided equipment).		Ensure that the 6-digit material code on the order matches the 6-digit material code on the shipping container.	
3	Verify that the rack is installed according to the manufacturer's instructions and in accordance with all local codes and laws.			
4	Examine installation environment (customer provided equipment).			
5	Verify that the rack is grounded in accordance with local electrical code.			

No.	Task	Reference	Avaya recommendation	✓
6	Remove the cabinet doors, if necessary.			
7	Attach the rails to the rack	<i>RI-SR: Installing and Removing the Rails</i>	<p>The rails included with the server will accommodate most square-hole racks. If these rails do not fit the rack, the customer must provide rails or a shelf for rack installation. Also, the rails included with the server might not work with round-hole racks, in which case the customer can obtain rails and/or a shelf from any distributor, for example http://www.racksolutions.com/. The customer-provided rails and rack must be on site prior to the first day of installation.</p> <p> Note: The customer is responsible for any rack screws.</p>	
8	Attach the server to the rack.	<i>RI-SR: Installing the System in the Rack</i>		
9	(Optional) Install the cable management arm.	CMAI <i>RI-SR: Routing the Cables</i>		
10	Connect the power cord(s).	<i>GS: Connecting the Power Cables</i> <i>GS: Securing the Power Cord</i>		
11	Power up the server.	<i>GS: Turning on the System</i>		

Installing the disk array

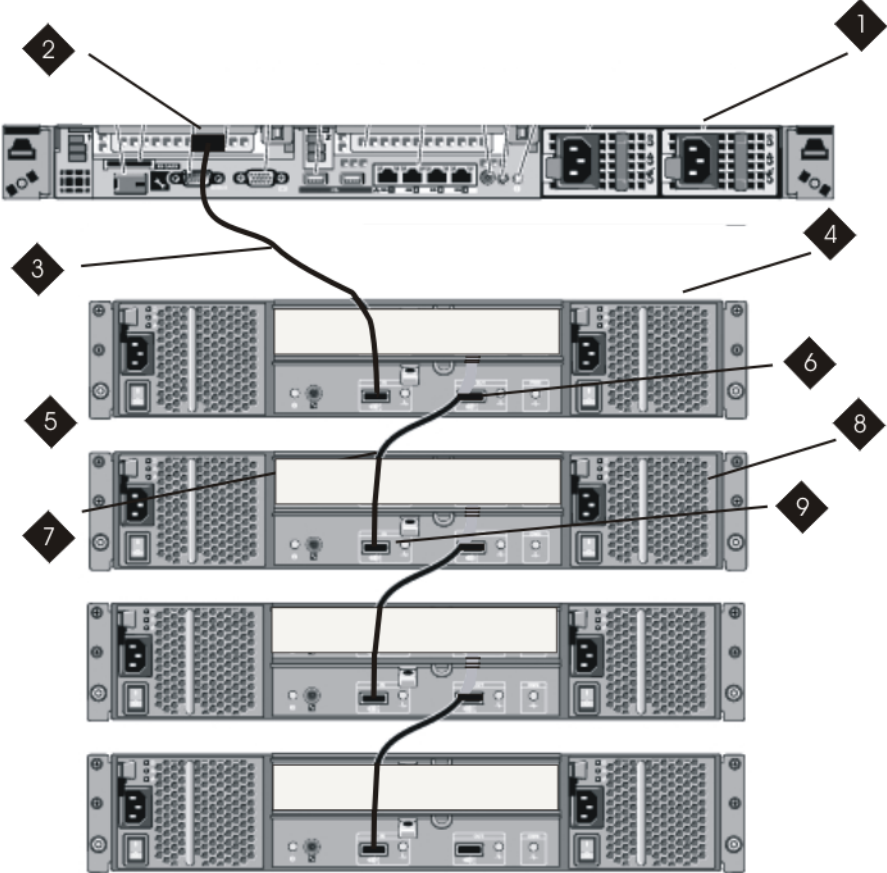
This section contains instructions about installing the disk array, connecting the first disk array to the database host, and connecting additional disk arrays. The call-outs from the diagram are given in the step-by-step procedure.

 **Danger:**

A fully configured disk array weighs 23.31 kg (51.4 lb.). You need two persons to safely move and install a disk array.

Procedure

1. Using the Dell server rack installation instructions found in [Installing the server in the rack](#) on page 20, install the disk arrays into a rack.
2. Connect one end of the SAS cable (3) from port 1 of the RAID controller card (2) on the back of the database host (1). The card is located in PCIe2 slot 1. For a single host deployment, connect to the only server in the deployment. For a dual host or multi-host deployment, connect to the server that is acting as the database host.
3. Connect the other end of the SAS cable to the IN EMM connector (5) on the back panel of the first disk array (4). When you look at the back of the disk array, the IN EMM connector is the lower EMM connector on the left half of the unit. Do not use the EMM connectors on the upper half of the unit, if present. After you power-up the disk arrays, a green LED will light next to the EMM connector to verify that the SAS cable is connected.
4. If you have more than one disk array, connect another SAS cable (7) from the lower right OUT connector (6) on the first disk array (4) to the lower left IN connector (9) on the next disk array (8). You can connect up to four disk arrays to RAID controller card port 1. If you have more than four disk arrays, you must use port 2 of the RAID controller card for disk arrays 5-8.



Reference	Description
1	Application/database host in a Single host deployment; database host in a Dual host or Multi-host deployment
2	H800 RAID Controller
3	SAS cable
4	First disk array
5	IN connector on EMM
6	OUT connector on EMM
7	SAS cable
8	Next disk array

Next steps

Continue with [Turning on the disk arrays](#) on page 24.

Turning on the disk arrays

About this task

After you install each MD1220 disk array in the rack, turn on each disk array to make sure that it works. Once you determine that the disk array is working, turn it off before you start any software installation procedure.

If you have any issues with this procedure, contact your next higher level of Avaya technical support.

Procedure

1. Plug one end of the power cord into the MD1220 power supply and the other end into a UPS or nonswitched outlet.
2. Turn on both power supplies.
The MD1220 might take a few seconds to turn on. During this time, you might see the MD1220 amber fault LED, the green power LED, the power supply LEDs, and the blue system locator LED turn on and off intermittently. When the power-on sequence is complete, only the green power LEDs on the front and rear remain lit. If you see one or more amber fault LEDs lit up, contact Dell for support. A green LED will light next to the EMM connector to verify that the SAS cable is connected.
3. Turn off both power supplies.





Next steps

For instructions on when to turn on the MD1220 disk arrays while installing the Avaya IQ software, see *Implementing Avaya IQ for Turnkey Deployments*.

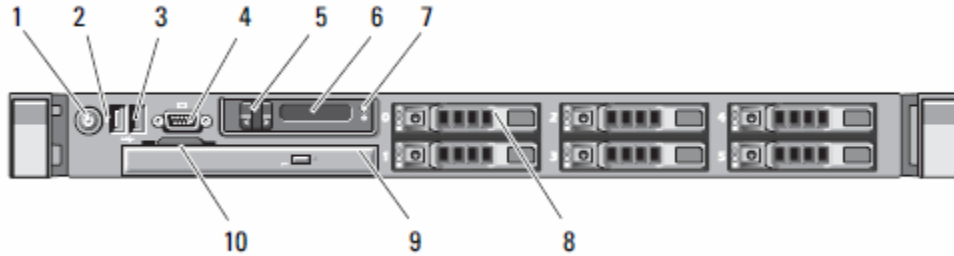
Chapter 4: Troubleshooting problems on the R610 server and MD1220 disk array

General troubleshooting

The references listed below contain general troubleshooting information.

Topic	Reference	Avaya recommendation
System features and diagnostics that are accessible during startup	HOM: <i>Access System Features During Startup</i>	<p> Caution: Only performed when requested by Avaya Support personnel.</p> <p> Note: Keyboard, monitor, and mouse are required.</p>
LCD panel	HOM: <i>LCD Panel Features</i>	
LCD status messages	HOM: <i>LCD Status Messages</i>	See <i>LCD status message explanations</i> in this document for recommended resolutions.
System messages	HOM: <i>System Messages</i>	<p> Caution: For advanced troubleshooting only—consult Avaya Services.</p> <p> Note: Keyboard, monitor, and mouse are required.</p>

Front panel troubleshooting indicators

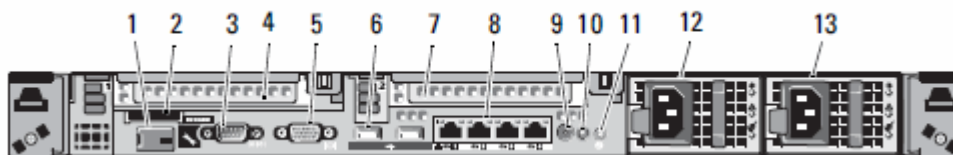


Use the front panel indicators listed to troubleshoot server components:


No.	Description	Avaya recommendation
1	Power-on indicator, power button	<p>Indicates when the system power is on. The power button controls the DC power supply output to the system.</p> <p>* Note: Consult individual application/solution documentation for detailed shutdown procedures.</p> <p>* Note: To force an ungraceful shutdown, press and hold the power button for five (5) seconds.</p> <p>⚠ Caution: Not recommended for products/solutions that use System Platform.</p>
2	NMI button	<p>Used to troubleshoot software and device driver errors when using certain operating system. This button can be pressed using the end of a paper clip.</p> <p>⚠ Caution: Not recommended for products/solutions that use System Platform. Use this button only if directed to do so by qualified support personnel.</p>
3	USB connectors (2)	
4	Video connector	

No.	Description	Avaya recommendation
5	LCD menu buttons	Allows you to navigate to the control panel LCD menu.
6	LCD Panel	Provides system ID, status information, and system error messages. LCD background color indicates these conditions: <ul style="list-style-type: none"> • Blue: normal system operation • Amber: system needs attention LCD panel displays errors codes and descriptive tests.
7	System identification button	Turns the system ID modes on and off. The identification buttons on the front and back panels can be used to locate a particular system within a rack. When one of these buttons is pushed, the LCD panel on the front and the system status indicator on the chassis back panel flash blue until one of the buttons is pushed again. <p>* Note: Some applications/solutions use this light for additional functionality.</p>
8	Hard drives	Servers ship with two or more hard disk drives, depending upon product requirements.
9	Optical drive	
10	System identification panel	A slide-out panel for system information including the Express Service tag, embedded NIC MAC address, and iDRAC6 Express card MAC address. Space is provided for an additional label.

Rear panel troubleshooting components



To troubleshoot server components, use the following rear panel components:

No.	Server component	Purpose
1	iDRAC6 Enterprise port	Dedicated management port for the optional iDRAC Enterprise/Express card.
2	(Optional) VFlash media slot	Connects an external SD memory card for the optional iDRAC Enterprise/Express card.
3	Serial connector	
4	PCIe slot 1	H800 RAID card
5	Video connector	
6	USB connectors (2)	
7	PCIe slot 2	Not used
8	Ethernet connectors (4)	
9	System status indicator connector	
10	System status indicator	Provides a power-on indicator on the back panel of the system.
11	System identification button	<p>Turns the system ID modes on and off. Use the identification buttons on the front and back panels to locate a particular system within a rack. When you push one of these buttons, the LCD panel on the front and the system status indicator on the back panel flash blue until one of the buttons is pushed again.</p> <p> Note: Some applications or solutions use this light for additional functionality.</p>
12	Power supply 1 (PS1)	
13	Power supply 2 (PS2)	

Troubleshooting external server components

Use the checklist below to troubleshoot any of the following external server components:

Part number	Description	Hot-swappable?
700501316	R610 SRVR 146GB 10K SAS 2.5" HDD	Y
700501317	R610 SRVR 146GB 15K SAS 2.5" HDD	Y

Part number	Description	Hot-swappable?
700501315	R610 SRVR 300GB 10K SAS 2.5" HDD	Y
700501421	R610 SRVR 600GB 10K SAS 2.5" HDD	Y
700501183	R610 SRVR AC PWR SUP 502W ES	Y, if redundant
700501311	R610 SRVR AC PWR SUP 717W	Y, if redundant

No.	Task	Reference	Avaya recommendation	✓
1	Visually check for hardware LED fault indicators:			
	<ul style="list-style-type: none"> • R610 SRVR 146GB 10K SAS 2.5" HDD • R610 SRVR 146GB 15K SAS 2.5" HDD • R610 SRVR 300GB 10K SAS 2.5" HDD • R610 SRVR 600GB 10K SAS 2.5" HDD 	HOM: <i>Hard Drive Indicator Patterns for RAID</i> TG: <i>Storage</i>	If the HDD LED indicates a problem, consult the appropriate troubleshooting information.	
	<ul style="list-style-type: none"> • R610 SRVR AC PWR SUP 502W ES • R610 SRVR AC PWR SUP 717W 	HOM: <i>Power Indicator Codes</i> TG: <i>Power Supply Indicators</i>	If the LEDs indicate a problem, consult the appropriate troubleshooting information.	
2	If the hardware LED indicates a problem, consult the appropriate troubleshooting information:			
	<ul style="list-style-type: none"> • R610 SRVR 146GB 10K SAS 2.5" HDD • R610 SRVR 146GB 15K SAS 2.5" HDD • R610 SRVR 300GB 10K SAS 2.5" HDD • R610 SRVR 600GB 10K SAS 2.5" HDD 	HOM: <i>Troubleshooting Hard Drives</i>	<ul style="list-style-type: none"> • Inspect LEDs and LCD display output. • If the LED flashes green, then amber, then off (in that order), replace the HDD. • If the LED blinks amber, replace the HDD. 	

No.	Task	Reference	Avaya recommendation	✓
	<ul style="list-style-type: none"> • R610 SRVR AC PWR SUP 502W ES • R610 SRVR AC PWR SUP 717W 	HOM: <i>Troubleshooting Power Supplies</i>		
3	If the part is defective, see <i>Replacing external server components</i> .			

Troubleshooting internal server components

Use the checklist below to troubleshoot any of the following internal server components:

Part number	Description
700501323	R610 SRVR DUAL PORT 1GB NIC
700501422	R610 SRVR DVD-RW DRIVE W/ BRKT
700501423	R610 SRVR FAN FRU
700501320	R610 SRVR 2GB MEMORY DIMM
700501320	R610 SRVR 4GB MEMORY DIMM
700501325	R610 SRVR RAID BATTERY

No.	Task	Reference	Avaya recommendation	✓
1	Visually check for hardware LED fault indicators:			
	• R610 SRVR DUAL PORT 1GB NIC	TG: <i>NIC Indicators</i>	If the hardware LED indicates a problem, consult the appropriate troubleshooting information.	
	• R610 SRVR DVD-RW DRIVE W/ BRK	HOM: <i>Optical Drive</i>		
	• R610 SRVR FAN FRU	HOM: <i>Cooling Fans</i>		

No.	Task	Reference	Avaya recommendation	✓
	<ul style="list-style-type: none"> • R610 SRVR 2GB MEMORY DIMM • R610 SRVR 4GB MEMORY DIMM 	HOM: <i>System Memory</i>		
	• R610 SRVR RAID BATTERY	HOM: <i>RAID Battery</i>		
2	If the hardware LED indicates a problem, consult the appropriate troubleshooting information:			
	• R610 SRVR DUAL PORT 1GB NIC	HOM: <i>Troubleshooting a NIC</i>	Check NIC indicator LEDs. If problem persists, order replacement NIC.	
	• R610 SRVR DVD-RW DRIVE W/ BRK	HOM: <i>Troubleshooting an Optical Drive</i>	If problem persists, order replacement drive.	
	• R610 SRVR FAN FRU	HOM: <i>Troubleshooting a Fan</i>	If problem persists, order replacement fan.	
	<ul style="list-style-type: none"> • R610 SRVR 2GB MEMORY DIMM • R610 SRVR 4GB MEMORY DIMM 	HOM: <i>Troubleshooting System Memory</i>	If problem persists, order replacement memory.	
	• R610 SRVR RAID BATTERY	HOM: <i>RAID Battery</i>	Keyboard, monitor, and mouse required for advanced troubleshooting.	
3	If the part is defective, see <i>Replacing internal server components</i> .			

Troubleshooting external MD1220 disk array components

Use the procedures in this section to troubleshoot the following external MD1220 disk array components:

Part number	Description
700501315	MD1220 300-GB 10K SAS 2.5" HDD

No.	Task	Reference	Avaya recommendation	✓
1	Visually check for hardware LED fault indicators:			
	MD1220 300-GB 10K SAS 2.5" HDD	HOM: <i>Hard Drive Indicator Patterns for RAID</i> TG: <i>Storage</i>	If the HDD LED indicates a problem, consult the appropriate troubleshooting information.	
2	Visually check for hardware LED fault indicators:			
	MD1220 300-GB 10K SAS 2.5" HDD	HOM: <i>Troubleshooting Hard Drives</i>	<ul style="list-style-type: none"> • Inspect the LEDs and LCD display output. • If the LED flashes green, then amber, then off (in that order), replace the HDD. • If the LED blinks amber, replace the HDD. 	
3	If the part is defective, see <i>Replacing MD1220 disk array components</i> .			

Dell diagnostic tools

Overview of Dell diagnostic tools

The Avaya IQ turnkey solution provides diagnostic tools that are designed to diagnose hardware problems, power management issues, and proactive hardware monitoring of SAS hard drives and the RAID controllers.

- Integrated Dell Remote Access Controller (iDRAC) is a systems management hardware and software solution that provides management capabilities, crashed system recovery, and power control functions for the Dell PowerEdge systems.

The iDRAC uses an integrated System-on-Chip microprocessor for the remote monitor and control system. The iDRAC coexists on the system board with the managed PowerEdge server. The server operating system executes applications while the iDRAC monitors and manages the environment and state of the server outside of the operating system.

You can configure the iDRAC to send you an e-mail message or Simple Network Management Protocol (SNMP) trap alert for warnings or errors. To help you diagnose the probable cause of a system crash, iDRAC can log event data and capture an image of the screen when it detects that the system has crashed.

To enable the iDRAC network interface, the system uses a static IP address of 192.168.0.120 by default. You must configure the IP address before the iDRAC is accessible. After you configure the iDRAC on the network, you can gain access to the solution at the assigned IP address. To access, use the iDRAC Web interface, Telnet, or Secure Shell (SSH), and supported network management protocols, such as Intelligent Platform Management Interface (IPMI).

- Dell OpenManage Server Administrator (OMSA) provides a comprehensive, one-to-one systems management solution in two ways: from an integrated, Web browser-based graphical user interface (GUI) and from a command line interface (CLI) through the operating system. Using OMSA, system administrators can manage systems locally and remotely on a network. With OMSA, system administrators can focus on managing their entire network by providing comprehensive one-to-one systems management.

In the context of Server Administrator, a system refers to a standalone system, a system with attached network storage units in a separate chassis, or a modular system consisting of one or more server modules in a modular enclosure.

Server Administrator provides information about:

- Systems that are operating properly and systems that have problems

- Systems that require remote recovery operations

Server Administrator provides easy-to-use management and administration of local and remote systems through a comprehensive set of integrated management services. You can access Server Administrator both locally and remotely from the Server Administrator home page. You can access remotely monitored systems by LAN connections. Server Administrator ensures the security of its management connections through role-based access control (RBAC), authentication, and secure socket layer (SSL) encryption.

Configuring iDRAC

You must configure iDRAC on each application host and database host in the deployment. Configure iDRAC before you run First Boot on each host.

Before you begin

Confirm that the iDRAC maintenance port NIC 1 has a network cable available but not connected before you start the configuration.

Confirm that the customer LAN is set up for auto-negotiate.

Obtain the IP address or host name of the iDRAC network connection for each host in the deployment. When performing maintenance activities, you will access each host using a different browser window or tab.

Obtain a Monitor, a USB keyboard and a mouse.

Important:

For ease of installation, Avaya recommends that you use the host IP address instead of the host name. For proper Domain Name System (DNS) resolution with Java and Red Hat Linux, Avaya IQ host names must follow specific naming requirements. Avaya IQ host names are limited to alphanumeric characters and must not contain punctuation characters such as hyphens, underscores, or periods, and special characters such as @ or &. If you configure a host name, you must also configure the Domain Name and the host name string. If not done properly, the connection will not work.

The iDRAC port requires firewall port 80. If used with SNMP, the iDRAC port will need ports 161 or 162 to connect to the SNMP Client Server.

Procedure

1. Connect the Monitor, USB Keyboard, and the mouse to the server.
2. Turn on the host computer.
The host computer boots up.
3. Press **F2** to enter the **System Setup**.
4. On the System Setup page, select **iDRAC Settings**.
5. On the iDRAC Settings page, select **Network**.

6. On the iDRAC Settings- Network page, set the following values.
 - **Enable IPv4** is **Enabled**
 - **NIC** is **Enabled**
 - **NIC Selection** is set to **LOM1**
 - **IPv6** is **Disabled**
7. If you want to use Static IP addresses for iDRAC configuration, set the following values for IPv4.
 - **Enable IPV4** is **Enabled**.
 - **Static IP Address**: The static IP address of the customer.
 - **Static Gateway**: The static gateway address of the customer.
 - **Subnet Mask**: The subnet mask address of the customer.
 - If configuring iDRAC for a host name instead of the IP address, enter the **DNS Server 1** and **DNS Server 2**.
8. Press **Esc** twice.
9. Click **Save Changes and Exit** to exit the configuration interface.
The host computer reboots and iDRAC is configured.
10. While the host is rebooting, plug the network cable into the iDRAC maintenance port NIC1.
The iDRAC port is shared with NIC1 and this feature is available only in iDRAC Express. If the configuration is successful, the LAN activity LEDs will flash.
11. Repeat this procedure for all application hosts and the database host.

Result

If the configuration fails and there is no LAN activity showing on the LEDs, go back into iDRAC configuration, reset all of the defaults, and repeat this procedure.

Using iDRAC

After you install iDRAC on a host in a turnkey deployment, you can use the procedures in this section to view the status of the hardware and firmware on the host.

 **Note:**

For more detailed information about iDRAC, see the on-line help provided with the iDRAC interface or see the iDRAC documentation on the Dell support site:

<http://www.support.dell.com/>

Before you begin

Confirm that iDRAC was installed during initial deployment of the turnkey solution.

Obtain the host name or IP address of the iDRAC network connection for each server in the deployment. You must access each server using a different browser window or tab.

Important:

For proper Domain Name System (DNS) resolution with Java and Red Hat Linux, Avaya IQ host names must follow specific naming requirements. Avaya IQ host names are limited to alphanumeric characters and must not contain punctuation characters such as hyphens, underscores, or periods, and special characters such as @ or &.

Procedure

1. Open your Web browser.
2. Enter the following URL into the address field of your browser:
`https://IPAddress`
where *IPAddress* is the IP address assigned to the iDRAC port on the host.
3. Log in with the default user name `root` and password `calvin` or a user name and password that your administrator gives you.
4. Follow the help provided with the interface or use the *Integrated Dell Remote Access Controller (iDRAC) User Guide*. See the following sections of this document for typical user procedures:
 - Configuring Your iDRAC
 - Configuring Platform Events
 - Adding and Configuring iDRAC Users
 - Monitoring and Alert Management
 - Recovering and Troubleshooting the Managed System
 - Power Monitoring and Management

Tip:

During implementation, create a services user, such as `sroot` that services personnel can use. Once logged on to iDRAC, select **Remote Access > Network/Security > Users** to add users.

5. When finished with your session, log out of the iDRAC interface.

Configuring OMSA

OpenManage Server Administrator (OMSA) is an LSI application. Using OMSA, you can locally or remotely monitor and manage the disk arrays. OMSA provides vital information about virtual

disks and physical disks on MD1220 disk arrays connected to the database host. An OMSA event system log or a Management Information Base (MIB) can record and display system errors and events. Once you configure OMSA, you can use OMSA to send hardware alarms to a Network Management System (NMS).

OMSA software is packaged with the Avaya IQ software at the factory. You can activate OMSA when you install Avaya IQ software, and you must configure OMSA after you install the Avaya IQ software.

Before you begin

You must install Avaya IQ software and make it operational on the application hosts and the database host before you configure OMSA. Customer IT personnel who are familiar with SNMP traps and MIB browsers must configure OMSA.

Procedure

1. Log on to the database host as root or a user with root-level privileges.

2. To edit the SNMP configuration file, enter:

```
vi /etc/snmp/snmpd.conf
```

3. At the end of the file, add the following line:

```
trapsink IPAddress CommunityName
```

where *IPAddress* is the IP address of the management station and *CommunityName* is the SNMP community name.

4. To save and close the file, enter:

```
:wq!
```

5. To restart the SNMP agent, enter:

```
service snmpd restart
```

Using OMSA

After OpenManage Server Administrator (OMSA) has been configured, use the procedures in this section to log on to OMSA so you can view the status of hardware and firmware on the host.

Note:

For more detailed information about OMSA, see the on-line help provided with the OMSA interface or see the *Dell OpenManage Server Administrator Version 6.4 User's Guide* on the Dell support site:

<http://www.support.dell.com/>

Before you begin

Obtain the host name or IP address of each host in the deployment. You must access each host using a different browser window or tab.

Important:

For proper Domain Name System (DNS) resolution with Java and Red Hat Linux, Avaya IQ host names must follow specific naming requirements. Avaya IQ host names are limited to alphanumeric characters and must not contain punctuation characters such as hyphens, underscores, or periods, and special characters such as @ or &.

Procedure

1. Open your Web browser.
 2. Enter the following URL into address field of your browser:
`https://HostName:1311`
where *HostName* is the host name or IP address assigned to the host.
 3. Log in with the user name and password your administrator gives you.
 4. Follow the help provided with the interface or use the *Dell OpenManage Server Administrator Version 6.4 User's Guide*. See the following sections of this document for typical user procedures:
 - Assigning User Privileges
 - Configuring the SNMP Agent
 - Using Server Administrator
 - Working With Remote Access Controller
 - Server Administrator Logs
 - Setting Alert Actions
-

Chapter 5: Replacing components

Replacing components in the R610 Server

Safety information

General safety information

Follow these rules to ensure general safety:

- Observe good housekeeping in the area of the system units during and after maintenance.
 - Place removed covers and other parts in a safe place, away from all personnel, while you are servicing the system unit.
 - Keep your tool case away from walk areas so that other people do not trip over it.
- When lifting any heavy object:
 - a. Verify that you can stand safely without slipping.
 - b. Distribute the weight of the object equally between your feet.
 - c. Use a slow lifting force. Never move suddenly or twist when you attempt to lift.
 - d. Lift by standing or by pushing up with your leg muscles. This action removes the strain from the muscles in your back. Do not attempt to lift any objects that weigh more than 16 kg (35 lb.) or objects that you think are too heavy for you.
- Do not perform any action that causes hazards to the customer, or that makes the equipment unsafe.
- Before you start the system unit, ensure that other technical support staff and customer personnel are not in a hazardous position.
- Do not wear loose clothing that can be trapped in moving parts. Ensure that your sleeves are fastened or rolled up above your elbows. If your hair is long, fasten it.
- Insert the ends of your necktie or scarf inside clothing or fasten it with a nonconductive clip, approximately 8 cm (3 inches) from the end.

- Do not wear jewelry, chains, metal-frame eyeglasses, or metal fasteners for your clothing. Metal objects are good electrical conductors.
- Remove items from your shirt pocket, such as pens and pencils, that could fall into the server as you lean over it.
- Wear safety glasses when you are working in any conditions that might be hazardous to your eyes.
- Avoid dropping any metallic objects, such as paper clips, hairpins, and screws, into the server.
- After service, reinstall all safety shields, guards, labels, and ground wires. Replace any safety device that is worn or defective.
- Reinstall all covers correctly before returning the server to service.

 **Warning:**

To prevent access to electrical hazards by unauthorized personnel and to ensure continued compliance with international radiated emissions requirements, tighten all captive screws securely so they cannot be loosened without the use of a tool.

Safety Inspection

Use this list to identify potentially unsafe conditions related to the server. Each server, as it was designed and built, had required safety items installed to protect users and technical support staff from injury. If any unsafe conditions are present, determine how serious the apparent hazard is and whether you can safely continue without first correcting the problem.

Consider these conditions and the safety hazards they present:

- Electrical hazards, especially primary power. Primary voltage on the frame can cause serious or fatal electrical shock.
- Explosive hazards, such as a damaged monitor face or bulging capacitor.
- Mechanical hazards, such as loose or missing hardware.

Perform the following safety checks when servicing this unit:

1. Check exterior covers for damage such as loose, broken, or sharp edges.
2. Shutdown the system and unplug the AC power cords.
3. Check the power cord:
 - Verify that the third-ground connector is in good condition. Use an ohmmeter to measure third-wire ground continuity for 0.1 ohm or less between the external ground pin and frame ground.
 - Verify that the power cord is the appropriate type.
 - Verify that insulation is not frayed or worn.
4. Check inside the server for any obvious unsafe conditions, such as metal filings, contamination, water or other liquids, or signs of fire or smoke damage.

5. Check for worn, frayed, or pinched cables.
6. Verify that the power-supply cover fasteners, such as screws or rivets, have not been removed or tampered with.
7. If you notice any damage, replace the appropriate system components.

Electrical safety rules

Electrical current from power, telephone, and communication cables can be hazardous. To avoid any shock hazard, you must disconnect all power cords and cables.

Observe the following rules when working on electrical equipment.

- Find the room emergency power-off (EPO) switch, disconnecting switch, or electrical outlet. If an electrical accident occurs, you can then operate the switch or unplug the power cord quickly.
- Do not work alone under hazardous conditions or near equipment that has hazardous voltages.
- Disconnect all power before:
 - Doing a mechanical inspection
 - Working near power supplies
 - Removing or installing servers
- Before you start to work on the server, unplug the power cord. If you cannot unplug it, ask the customer to switch off the wall box that supplies power to the server. Afterwards, lock the wall box in the off position.
- If you must work on a server that has exposed electrical circuits, observe the following precautions:
 - Ensure that another person, familiar with the power-off controls, is near you. Another person must be there to switch off the power if necessary.
 - Stand on suitable rubber mats to insulate you from grounds such as metal floor strips and system unit frames. Obtain the mats locally, if necessary.
 - When using testers, set the controls correctly and use the approved probe leads and accessories for that tester.
 - Use only one hand when working with powered-on electrical equipment. Keep the other hand in your pocket or behind your back. This precaution can prevent a current from passing through your body.
- Regularly inspect and maintain your electrical hand tools for safe operational condition. Do not use worn or broken tools and testers.
- Never assume that power was disconnected from a circuit. First, verify that the unit is turned off.
- Always look carefully for possible hazards in your work area. Examples of hazards are moist floors, non-grounded power extension cables, power surges, and missing safety grounds.

- Keep components away from plastics and other synthetic materials such as polyester clothing. Most clothing is insulative and retains a charge even when you are wearing a wrist strap.
- Do not hand components to another person unless that person is grounded at the same potential level. In general, avoid contact with other people.
- Use the black side of a grounded work mat to provide a static-free work surface. The mat is especially useful when handling ESD-sensitive devices.
- Take additional care when handling devices during cold weather. Heating reduces indoor humidity and increases static electricity.
- Verify that the ESD protective devices you use are ISO 9000 certified as fully effective.

Replacing external R610 server components

Use the procedures in this section when replacing the following external R610 server components:

Part number	Description
700501316	R610 SRVR 146GB 10K SAS 2.5" HDD
700501317	R610 SRVR 146GB 15K SAS 2.5" HDD
700501315	R610 SRVR 300GB 10K SAS 2.5" HDD
700501986	R610 SRVR 600GB 10K SAS 2.5" HDD
700501311	R610 SRVR AC PWR SUP 717W
700501503	MD1220 SAS CABLE

 **Note:**

Hard disk drives and redundant power supplies are hot-swappable; you do not have to turn off the server. Replacing a power supply usually does not require removing the server from the rack unless cables or other obstructions prevent removing and replacing the power supply.

No.	Task	Reference	Avaya recommendation	✓
1	Power down server, if necessary.		Determine whether the replaceable component is hot-swappable.	
2	Slide the server out of the rack, if necessary.	RI-SR CMAI: <i>Moving the CMA Away from the CMA Tray</i>	Ensure that the Cable Management Arm (if present) moves freely out of the way of rear panel components.	

No.	Task	Reference	Avaya recommendation	✓
3	Replace the component:			
	<ul style="list-style-type: none"> • R610 SRVR 146GB 10K/15K SAS 2.5" HDD • R610 SRVR 300GB 10K SAS 2.5" HDD • R610 SRVR 600GB 10K SAS 2.5" HDD 	HOM: <i>Hard drives</i>		
	<ul style="list-style-type: none"> • R610 SRVR AC PWR SUP 717W 	HOM: <i>Power supplies</i>	Ensure that the replacement power supply matches the specifications of the defective power supply.	
4	Slide the server into the rack, if necessary.	RI-SR	Ensure that the Cable Management Arm (if present) moves freely out of the way of rear panel components.	
5	Connect the power cables to the power supply, if necessary.	GS: <i>Connecting the Power Cables</i> GS: <i>Securing the Power Cord</i>		
6	Power up the server, if necessary.	GS: <i>Turning on the System</i>		

Replacing internal R610 server components




Use the procedures in this section when replacing the following internal R610 server components:

Part number	Description
700501323	R610 SRVR DUAL PORT 1GB NIC
700501422	R610 SRVR DVD-RW DRIVE W/ BRKT
700501423	R610 SRVR FAN FRU
700501320	R610 SRVR 4GB MEMORY DIMM
700501325	R610 SRVR RAID BATTERY

Part number	Description
700501186	R610 PERC H800 RAID CONTROLLER

 **Note:**

You might need a monitor, keyboard, and mouse to reboot the server.

No.	Task	Reference	Avaya recommendation	
1	Have the proper tools	HOM: <i>Recommended Tools</i>		
2	Observe safety warnings	HOM: <i>Safety First—For You and Your System</i>		
3	Power down server			
4	Slide the server out of the rack.	RI-SR		
5	Remove the cover.	HOM: <i>Opening and Closing the System</i>	 Electrostatic alert: Ensure that you are properly grounded before handling internal components.	
6	Replace the component:			
	R610 SRVR DUAL PORT 1GB NIC	HOM: <i>Network Interface Card</i>		
	R610 SRVR DVD-RW DRIVE W/ BRKT	HOM: <i>Optical Drive</i>	In the “Removing an Optical Drive” section, perform Steps 2–5 only. In the Installing an “Optical Drive” section, perform Steps 2–6, 8, and 10 only.	
	R610 SRVR FAN FRU	HOM: <i>Cooling Fans</i>	 Caution: Do not attempt to hot-swap a fan.	

No.	Task	Reference	Avaya recommendation	✓
	R610 SRVR 4GB MEMORY DIMM	HOM: <i>System Memory</i>	Consult server cover label for memory placement. Consult application/solution documentation for specific procedures.	
	R610 SRVR RAID BATTERY	HOM: <i>RAID Battery</i>	Remove the battery from the cable. Do not replace the battery cable unless it is defective. * Note: Monitor, keyboard, and mouse might be necessary for server reboot.	
	R610 PERC H800 RAID CONTROLLER	HOM: <i>H800 RAID Controller</i>		
7	Replace the cover.	HOM: <i>Opening and Closing the System</i>		
8	Slide the server into the rack.	RI-SR	Ensure that the Cable Management Arm (if present) moves freely out of the way of rear panel components.	
9	Connect and secure the power cords.	GS: <i>Connecting the Power Cables</i> GS: <i>Securing the Power Cord</i>		
10	Power up the server.	GS: <i>Turning on the System</i>		

Returning defective equipment

Procedure

1. Place the defective equipment in the protective packaging that accompanied the replacement equipment.

2. Return the defective equipment to Avaya using the procedures established for your region.

LCD status message explanations

LCD status codes, the associated text, the likely cause(s) for the error code, and the corrective action are listed below. When escalation is the corrective action, contact Avaya if you have a maintenance contract with Avaya or contact the Avaya business partner from whom you purchased the server. If the escalation requires replacing a field replaceable unit (FRU), see:

- *Replacing external server components*
- *Replacing internal server components*

Code	Text	Causes	Corrective action
N/A	AVAYA	AVAYA displays when: <ul style="list-style-type: none"> • The system is powered on. • The power is off and active POST errors are displayed. 	This message is for information only.
E1000	FAILSAFE, Call Support		Escalate for possible server replacement.
E1114	Temp Ambient	Ambient system temperature is out of acceptable range.	Check room temperature and external air flow. If both are within acceptable limits, then escalate for possible server replacement.
E1116	Temp Memory	Memory has exceeded acceptable temperature and has been disabled to prevent damage to the components.	Check room temperature and external air flow. If both are within acceptable limits, then escalate for possible server replacement.
E12nn	xx PwrGd	Specified voltage regulator has failed.	Escalate for possible server replacement.
E1210	CMOS Batt	CMOS battery is missing, or the voltage is out of acceptable range.	Shut down server for 1 hour and disconnect the power supply. If problem continues, escalate for possible server replacement.
E1211	ROMB Batt	RAID battery is either missing, bad, or unable	Check room temperature and external air flow. If both are within acceptable limits, then

Code	Text	Causes	Corrective action
		to recharge due to thermal issues.	escalate for possible server replacement.
E1216	3.3V Regulator failure	3.3V voltage regulator has failed.	See HOM: <i>Troubleshooting Expansion Cards</i> . Turn off the system and attached peripherals. Power down system and unplug power cord. Open system and ensure that expansion card riser and expansion card are firmly seated. Close system, power up. If trouble persists, replace card.
E1229	CPU # VCORE	Processor # VCORE voltage regulator has failed.	Escalate for possible server replacement.
E122A	CPU # VTT Regulator failure	Specified processor VTT voltage regulator has failed	Replace the server.
E122C	CPU Power Fault	A power fault was detected when powering up the processor(s).	Remove AC power to the system for 10 seconds and restart the system.
E122D	Memory Regulator # Failed	One of the memory regulators has failed.	Reseat the memory modules.
E122E	On-board regulator failed.	One of the on-board voltage regulators failed.	Remove AC power to the system for 10 seconds and restart the system.
E1310	RPM Fan ##	RPM of specified cooling fan is out of acceptable operating range.	Check room temperature and external air flow. If both are within acceptable limits, then escalate for possible server replacement.
E1311	RPM Fan Mod #x	RPM of fan x in the # module is out of acceptable operating range.	Check room temperature and external air flow. If both are within acceptable limits, then escalate for possible server replacement.
E1313	Fan Redundancy	The system is no longer fan-redundant. Another fan failure will put the system at risk of over-heating.	Check room temperature and external air flow. If both are within acceptable limits, then escalate for possible server replacement.

Code	Text	Causes	Corrective action
			Check control panel LCD for additional scrolling messages.
E1410	CPU # IERR	Specified microprocessor is reporting an internal error.	Escalate for possible server replacement.
E1414	CPU # Thermtrip	Specified microprocessor is out of acceptable temperature range and has halted operation.	Check room temperature and external air flow. If both are within acceptable limits, then escalate for possible server replacement. * Note: The LCD continues to display this message until the system's power cord is disconnected and reconnected to the AC power source.
E1418	CPU # Presence	Specified processor is missing or bad, and the system is in an unsupported configuration.	Escalate for possible server replacement.
E141C	CPU Mismatch	Processors are in an unsupported configuration.	Run server diagnostics. This requires a keyboard and monitor.
E141F	CPU Protocol	The system BIOS has reported a processor protocol error.	Escalate for possible server replacement.
E1420	CPU Bus PERR	The system BIOS has reported a processor bus parity error.	Escalate for possible server replacement.
E1422	CPU Machine Chk	The system BIOS has reported a machine check error.	Escalate for possible server replacement.
E1610	PS # Missing	No power is available from the specified power supply; specified power supply is improperly installed or faulty.	Escalate for possible power supply replacement.
E1614	PS # Status	No power is available from the specified power supply; specified power	Escalate for possible power supply replacement.

Replacing components

Code	Text	Causes	Corrective action
		supply is improperly installed or faulty.	
E1618	PS # Predictive	Power supply voltage is out of acceptable range; specified power supply is improperly installed or faulty.	Escalate for possible power supply replacement.
E161C	PS # Input Lost	Power source for specified power supply is unavailable, or out of acceptable range.	Check the AC power source for the specified power supply. Escalate for possible power supply replacement.
E1620	PS # Input Range	Power source for specified power supply is unavailable, or out of acceptable range.	Escalate for possible power supply replacement.
E1624	PS Redundancy	The power supply subsystem is no longer redundant. If the last supply fails, the system will go down.	Escalate for possible power supply replacement.
E1626	Power Supply Mismatch	The power supplies in the system are not the same wattage.	Ensure that power supplies with matching wattage are installed.
E1629	Power required > PSU wattage.	The system configuration requires more power than the power supplies can provide, even with throttling.	Turn off power to the system, reduce the hardware configuration or install higher-wattage power supplies, and then restart the system.
E1710	I/O Channel Chk	The system BIOS has reported an I/O channel check.	Escalate for possible server replacement.
E1711	PCI PERR B## D## F##	reported a PCI parity error on a component that resides in PCI configuration space at bus ##, device ##, function ##.	Escalate for possible server replacement.
	PCI PERR Slot #	The system BIOS has reported a PCI parity error on a component that resides in the specified PCI slot.	

Code	Text	Causes	Corrective action
E1712	PCI SERR B## D## F##	The system BIOS has reported a PCI system error on a component that resides in PCI configuration space at bus ##, device ##, function ##.	Escalate for possible server replacement.
	PCI SERR Slot #	The system BIOS has reported a PCI system error on a component that resides in the specified slot.	
E1714	Unknown Err	The system BIOS has determined that there has been an error in the system, but is unable to determine its origin.	Escalate for possible server replacement.
E1715	Fatal I/O error.	The system BIOS has determined there has been an error in the system.	Call Avaya Services.
E1716	Chipset IERR Bus ## Dev ## Function ##.	The system BIOS has reported a chipset internal error that resides in bus ##, device ##, function ##.	Call Avaya Services.
E1717	CPU ## internal error.	The system BIOS has determined that the specified processor has had an internal error.	Call Avaya Services.
E171F	PCIE Fatal Err B## D## F##	The system BIOS has reported a PCIe fatal error on a component that resides in PCI configuration space at bus ##, device ##, function ##.	Reseat all PCIe cards, then reboot the system. If the problem persists, escalate for possible server replacement.
	PCIE Fatal Err Slot #	The system BIOS has reported a PCIe fatal error on a component that resides in the specified slot.	
E1810	HDD ## Fault	The SAS subsystem has determined that hard	Remove the front bezel and check the top LED on the hard drives. If LED is off or flashing

Code	Text	Causes	Corrective action
		drive ## has experienced a fault.	green, then amber, then off or flashing amber 4 times per second, the hard drive is probably failing. Escalate for possible hard drive replacement.
E1811	HDD ## Rbld Abrt	The specified hard drive has experienced a rebuild abort.	
E1812	HDD ## Removed	The specified hard drive has been removed from the system.	Information only.
E1A11	PCI Riser hardware & configuration mismatch	PCIe risers are not configured correctly. Some invalid configurations prevent the system from powering on.	Reinstall the expansion-card riser. Reseat the NIC. If problem persists, replace the server.
E1A12	PCI Riser not detected	One or all of the PCIe risers is missing. The prevents the system from powering on.	Reinstall the missing riser card(s).
E1A14	SAS Cable A	SAS cable A is missing or bad.	Escalate for possible server replacement.
E1A15	SAS Cable B	SAS cable B is missing or bad.	Escalate for possible server replacement.
E1A1D	Control panel USB cable not detected.	USB cable to the control panel is missing or bad.	Reseat the cable. If the problem persists, escalate for possible server replacement.
E2010	No Memory	No memory is installed in the system.	Escalate for possible memory or server replacement.
E2011	Mem Config Err	Memory detected, but is not configurable. Error detected during memory configuration.	Escalate for possible server replacement.
E2012	Unusable Memory	Memory is configured, but not usable. Memory subsystem failure.	Escalate for possible memory or server replacement.
E2013	Shadow BIOS Fail	The system BIOS failed to copy its flash image into memory.	Escalate for possible memory or server replacement.
E2014	CMOS Fail	CMOS failure. CMOS RAM not functioning properly.	Escalate for possible server replacement.

Code	Text	Causes	Corrective action
E2015	DMA Controller	DMA controller failure.	Escalate for possible server replacement.
E2016	Int Controller	Interrupt controller failure.	Escalate for possible server replacement.
E2017	Timer Fail	Timer refresh failure.	Escalate for possible server replacement.
E2018	Prog Timer	Programmable interval timer error.	Escalate for possible server replacement.
E2019	Parity Error	Parity error.	Escalate for possible server replacement.
E201A	SIO Err	SIO failure.	Escalate for possible server replacement.
E201B	Kybd Controller	Keyboard controller failure.	Escalate for possible server replacement.
E201C	SMI Init	System management interrupt (SMI) initialization failure.	Escalate for possible server replacement.
E201D	Shutdown Test	BIOS shutdown test failure.	Escalate for possible server replacement.
E201E	POST Mem Test	BIOS POST memory test failure.	Escalate for possible server replacement.
E2020	CPU Config	CPU configuration failure.	Check for specific error messages.
E2021	Memory Population	Incorrect memory configuration. Memory population order incorrect.	Check for specific error messages. Escalate for possible memory or server replacement.
E2022	POST Fail	General failure after video.	Check for specific error messages.
E2110	MBE Crd # DIMM ## & ##	One of the DIMMs in the set implicated by "## & ##" has had a memory multi-bit error (MBE). If no memory card is present, the "Crd #" string is left out of the message.	Escalate for possible memory or server replacement.
E2111	SBE Log Disable Crd # DIMM ##	The system BIOS has disabled memory single-bit error (SBE) logging, and will not resume	Escalate for possible server replacement.

Code	Text	Causes	Corrective action
		logging further SBEs until the system is rebooted. "###" represents the DIMM implicated by the BIOS. If no memory riser card is present, the "Crd #" string is left out of the message.	
E2113	Mem Mirror Crd # DIMM ## & ##	The system BIOS has disabled memory mirroring because it has determined that one half of the mirror has had too many errors. "## & ##" represents the DIMM pair implicated by the BIOS. If no memory card is present, the "Crd #" string is left out of the message.	Escalate for possible memory or server replacement.
I1910	Intrusion	System cover removed.	Information only.
I1911	>3 ERRs Chk Log	LCD overflow message. A maximum of three error messages can display sequentially on the LCD. The fourth message displays as the standard overflow message.	Information only.
I1912	SEL Full	System Event Log is full of events, and is unable to log any more events.	Clear the log by deleting event entries.
W1228	ROMB Batt < 24hr	Warns predictively that the RAID battery has less than 24 hours of charge left.	Information only.
W1627	Power required > PSU wattage.	The system configuration requires more power than what the power supply can provide.	Turn off power to the system, reduce the hardware configuration or install higher-wattage power supplies, and then restart the system.
W1628	Performance degraded.	The system configuration requires more power than what	Turn off power to the system, reduce the hardware configuration or install higher-

Code	Text	Causes	Corrective action
		the power supply can provide, but it can boot if throttled.	wattage power supplies, and then restart the system.

Additional requirements when replacing an R610 server

When you replace an R610 Server used in a turnkey deployment, some situations require that you replace the entire server and salvaging working components from the old failed server. This section describes the procedures to:

- Replace a server that has failed completely.
- Replace a server when a component has failed and you cannot replace that component to repair the server.

Before you begin

You must obtain a replacement R610 server from Avaya. The material code for a replacement server is 700501326. The replacement server includes the following parts:

- R610 unit with 2.93-GHz processor
- Two 146-GB 10K or 15K disk drives
- Four 4-GB memory modules (16 GB total)
- One power supply
- Two Network Interface Cards (NICs) on the motherboard and two on the daughter board

You may need to obtain the following additional parts if you cannot salvage them from the failed system:

Part Number	Description
700501321	4-GB DIMMs. Each Single host, Dual host, or Multi-host application and database host must have 48 GB total or 12 DIMMs. Each All-in-One host must have 24 GB total or 6 DIMMS.
700501316 or 700501317	146-GB 10K or 15K disk drives. A total of four is required for Single host, Dual host, or Multi-host deployment servers. If you are replacing an All-in-One host, it does not use 146-GB disk drives, so those disk drives can be returned for use with other deployments.
700501315	300-GB 10K disk drives. A total of two is required for All-in-One host deployment servers.
700501986	600-GB 10K disk drives. A total of four is required for All-in-One host deployment servers.

Part Number	Description
700501311	717W POWER SUPPLY
700501186	RAID interface card H800 if the failed server was the database host.
700501503	SAS cable for the connection from the database host to the MD1220 disk array.

Obtain the *Dell Hardware Owner's Manual* for reference when replacing and moving components from the old server to the new server.

Procedure

1. Follow ESD safety procedures before you begin any work on the servers.
2. Take an inventory of where all components were located in the old server so that you can replicate them in the new server.
3. Remove any reusable components from the old server. This includes memory modules, disk drives, power supplies, and iDRAC module.
4. Assemble the new server using the old reusable components and the new components included with the replacement server.
5. Verify that the new server has the correct amount of memory, the correct number of disk drives, and two power supplies.
6. Reinstall the server in the equipment racks, as needed.

Next steps

Follow the turnkey software restore procedures in *Maintaining and Troubleshooting Avaya IQ*. Only Avaya or Avaya Partner personnel must perform the restore procedure.

Important:

During the replacement of a failed server, or when you replace individual components, the MAC address of the server will change. When this happens, you must also obtain and install a new license file for the deployment. The *Maintaining and Troubleshooting Avaya IQ* document describes how to install a new license file.

Replacing MD1220 disk array components

The only component of the MD1220 disk array that you can replace is a failed disk drive. To replace failed disk drives, see the procedures in “Restoring system and database data” in *Maintaining and Troubleshooting Avaya IQ* to determine whether you must restore any lost data on the disk array.

If any other internal or external components of the MD1220 fail, which would be the ESM or the power supply, contact Avaya support personnel to determine how to obtain those

replacement parts. If the MD1220 disk array chassis fails, contact Avaya support personnel to determine how to obtain a replacement unit.

To replace a failed disk array and restore data on the disk array, see the procedures in “Restoring system and database data” in *Maintaining and Troubleshooting Avaya IQ*.

Index

C

checklist	20
installation	20
components	46
returning to Avaya	46
configuring iDRAC, iDRAC	34
configuring OMSA	37

D

defective equipment	46
returning to Avaya	46
Dell R610 server	15
physical specifications	15
disk array	17
MD1220 disk array specifications, configuration, and options	17
disk arrays	20
documentation	8, 9
document set	8
downloading	9
how to use this document	8

F

field-replaceable units	43, 44
external	43
internal	44

I

installing the disk array	22
introduction to servers and disk arrays	20

L

LCD status messages	47
---------------------------	--------------------

M

maintenance tools, troubleshooting tools	33
MD1220 disk array	16, 17
front view	16
physical specifications	17
rear view	16
MD1220 disk arrays	24
turning on	24

R

R610 server	12
front view	12
registering hardware	20
replacing server	55
returning defective equipment	46

S

safety	39–42
electrical	41
ESD	42
inspection	40
server	13, 14, 17
environmental specifications	17
R610 server specifications, configuration, and options	14
rear view	13
server configurations	11
servers	20

T

troubleshooting	25–28, 30, 31
external components	28, 31
general	25
internal components	30
using front panel indicators	26
using rear panel components	27
turning on MD1220 disk arrays	24

U

using iDRAC, iDRAC	36
using OMSA, OMSA	38

